INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA

Reg. United States Pat. Off. Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.

No. 25 West 45th Street, New York.

Telephone—Bryant 2576.

CABLE ADDRESS: IRWORLD, NEW YORK.

HENRY C. PEARSON, Editor

Vol. 55 OCTOBER 1, 1916 No. 1

SUBSCRIPTIONS: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft or Postoffice or Express money order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

DISCONTINUANCES: Yearly orders for subscriptions and advertising are regarded as permanent, and after the first twelve months they will be discontinued only at the request of the subscriber or advertiser. Bills are rendered promptly at the beginning of each period, and thereby our patrons have due notice of continuance.

COPYRIGHT, 1916, BY THE INDIA RUBBER PUBLISHING CO.
Entered at the New York postoffice as mail matter of the second class.

TABLE OF CONTENTS ON LAST PAGE OF READING.

A PENSION PLAN FOR MUTUAL BENEFIT.

ANOTHER large firm has adopted the pension system in the belief that it will benefit both employer and employe. Realizing that the certainty of a competence in old age offers a great incentive to faithful and efficient work and also tends to minimize unrest and discontent, the Crompton & Knowles Loom Works, of Worcester, Massachusetts, and Providence, Rhode Island, which supplies equipment for rubber manufacturers, has instituted a liberal, retroactive plan to reward upon retirement those of its 2,600 operatives who have grown old in the firm's employ. The scheme is based proportionately upon the length of service and the average monthly wages. An employe whose earnings have averaged $60 monthly for 25 years prior to his retirement will receive annually the minimum pension, a sum equal to the income from $4,500 at the usual 4 per cent savings bank rate of interest, the principal obviously being equivalent to yearly savings of $180 for the 25 years. On this basis a man with a record of 25 years' service will receive $180 annually; 30 years' $216; 35 years, $252; 40 years', $288. When the average wages have been greater than $60 monthly the pension principal will be increased proportionately. For example, average earnings of $90 monthly for a period of 40 years will increase the principal to $10,800 and the pension to $432 annually; in other words, the retired employe will derive the benefit corresponding to the income from accumulated yearly savings of $270 for the entire 40 years.

In its announcement the firm emphasizes particularly the advantages of long service on the part of its operatives by reminding them that many large employers will hire absolutely nobody over 45 years of age, however skilled, for a permanent position; also that as a physical examination is frequently required it will become increasingly difficult to procure employment in new situations beyond that period of life. The net result of the plan will doubtless be to retain the most valuable operatives and to cause them of their own volition to seek retirement when incapacitated for further efficient service.

RUBBER PROSPECTS IN FRENCH INDO-CHINA.

THE growing importance of plantation rubber in French Indo-China has led us to publish in full the informing report of Lawrence P. Briggs, the American Consul at Saigon. Beginning with a product of 55 tons in 1909 it increased to 297 tons in 1915. For the present year, however, the increase is far more rapid. The first quarter of 1916 shows a product of 257 tons, or nearly as much as was exported in the whole of 1915. And that this growth is to continue is shown by the conservative estimate of O. Berguet, president in charge of the Association of Rubber Planters of French Indo-China, which is 4,000 tons in 1920. The product will doubtless far exceed this, for rubber growing has been found so profitable and the colony is so well represented by the Planters' Association, that much French, and no doubt American, capital is sure to be attracted to further *Hevea* planting in French Indo-China.

"IT SHINES FOR ALL" BUT THE RUBBER MEN.

THE uniformly sage, sane and sensible "Sun," New York, dropped a stitch in its news fabric September 8, when it published an article entitled "Artificial Rubber," etc. It was readable,—indeed, to the uninitiated, plausible,—and is being copied by other newspapers, but its inaccuracies were so glaring that we cannot forbear from gentle criticism.

For example, the writer says:

At the beginning of the war the European Governments

22914

discovered, what indeed was generally foreseen, that they would have to obtain the bulk of their rubber, raw and vulcanized, from the United States.

Read the "Central Powers" instead of "European Governments" and this would pass. The other powers depend upon England for their rubber.

Speaking of French rubber reclaiming, the writer avers:

Washing with steam is the method usually adopted, which drives off the sulphur in fumes and melts the rubber without burning it.

"Washing with steam" is bad enough but *"melting"!* Melted rubber is a sticky, tarry, offensive mess that always remains sticky, tarry and offensive. Melting never has been, and never will be, a part of any rubber manufacturing process.

Continuing, he says:

The one thing which this peculiar art of making old rubber feel and look like new requires is to restore the elasticity and compressibility of the original rubber, but this unfortunately it fails to do.

Compressibility? Is rubber, then compressible? Or water? We thought not.

Solemnly he states, a line or two further along:

They are now making rubber from gelatine.

Of course, and of course, they are emphatically *not*. Further on he iterates:

It is stated that the rubber which remains behind can be vulcanized so successfully that the final product has all the properties, elastic and compressible, of the best Para rubber.

Compressible again after what we said above! Our temper is going fast.

And as a final insult to anyone's intelligence, this melter and compressor of rubber, cites the old glue and glycerin formula, the gas tubing cover, the tire filler compound. Artificial rubber? And in the "Sun"!

THE COST OF WET RUBBER.

FOR the fiscal year ending June 30, 1916, the United States imports of plantation rubber were over 90,000 tons. The shrinkage on this amount may be reckoned at two per cent, or 1,800 tons. The same quantity of wild rubber; figuring a 20 per cent shrinkage, would lose 18,000 tons.

Freight rates from the Far East for 1915 may be reckoned at 2½ cents per pound, or $56 a ton. Therefore, manufacturers paid somewhere in the neighborhood of $100,800 on freight alone, on the water contained in that plantation rubber.

But had this been wild rubber with a shrinkage of 20 per cent, the contained water would have cost the importers $1,008,000 for freight, besides an extra amount for insurance, etc., not reckoned herein.

This, however, is not all the saving. It is estimated that it costs one-half cent per pound to wash and dry wild rubber, or $11.20 per ton, and to wash 90,000 tons would cost another exactly equal amount, namely, $1,008,000. In other words, the year's consumption of plantation rubber was cheaper by over $2,000,000 than would have been an equal amount of wild rubber.

This is why wild rubber, if it is to compete, should come to the market clean, and with a greatly limited shrinkage.

A LATIN-AMERICAN VIEWPOINT.

A SOUTH AMERICAN importer was asked why he always bought European-made tires and refused to handle the American product. For reply he brought out a circular of a well-known American-made tire and pointed to the statement, "We make 5,000 tires a day." He then produced a circular of a European-made tire that claimed, "In our factory 500 tires are made every day." Shrugging his shoulders, he said: "Five thousand tires a day means haste and carelessness. Five hundred a day, care and finish. That is why."

THE NATIONAL RETAIL DRY GOODS' ASSOCIATION is advocating the passage of an "Anti-return Goods Law." If the return of goods could be regulated equitably for both buyer and seller it would be of inestimable value, particularly to the makers of the goods. The rubber trade is a great sufferer through unfair claims, adjustments and returns. Why should not the alert and enterprising Rubber Club of America, Inc., force reforms in this field?

"KEDS" IS THE NEW NAME FOR TENNIS SHOES TO BE used hereafter by all who make or handle the footwear of the United States Rubber Co. As a bit of word coinage it is clever and original and will go far toward killing the popular but objectionable term "Sneakers."

A RUBBER HEEL EXPERT ESTIMATES THAT THE AVERAGE man takes 8,000 steps a day. An engineering authority reckons that a 180-pound man raises his feet two inches (or more) from the ground in walking, and that the impact of his heel is 30 foot-pounds each step. Now, the average rubber heel lasts three months. Eight thousand steps a day means 720,000 steps in ninety days. The mechanical engineer thus deduces that the total impact, or shock of three months' walking would be 21,600,000 foot-pounds. What, besides rubber, would withstand such constant pounding? Wood would be battered to pieces; stone reduced to impalpable powder; iron flattened out to a thin disk; gold beaten so thin as to be almost transparent. Rubber outwears them all, and that is the cause of its marvelously increasing use for heels the world over.

Plantation Rubber in Cochin China—II.

By Lawrence P. Briggs, United States Consul at Saigon, French Indo-China.

GETTING POSSESSION OF THE LAND.

AFTER deciding on a location, the next step is to get possession of the land. Theoretically, the government of Indo-China permits the acquisition of domain lands by gift or by auction sale under certain conditions of cultivation.

Free concessions apply only to tracts of 50 hectares or less. Application must be made on stamped paper to the administrator-in-chief of the province in which the land is located, indicating clearly the location of the land, its approximate extent and boundaries, and enclosing a rough sketch of the tract. In the case of tracts exceeding 10 hectares, the application must also be accompanied by the fee for the administrative inquiry, which fee is uniformly 20 cents (about 10 cents United States currency) per hectare. The application is then registered and a receipt signed by the administrator is returned to the applicant. Then for two months the administration posts notices of application (1) on the land, whose boundaries should be marked by the applicant; (2) at the town hall of the village where the land is located, and (3) on the door of the office of the administrator of the province. At the end of the two months the application is delivered, together with the report of the native authorities and the protests of third parties, if any, to a special investigating committee composed of the following officials: the administrator-in-chief of the province, president; the chief, or under-chief of the canton, and two notables of the village. If the land is located in a forest region, an agent of the Forestry Service is added to this committee. The applicant, the owners of the adjoining property and the occupants of the tract, if any, are duly summoned and sign the official report (process-verbal), formulating in it all observations and reservations which they consider necessary. When informed by the administrator of the conclusions of the committee the applicant, if he accepts, deposits with the administrator a map of the land and an official report of its location and delimitation. These reports and documents are sent to the governor of the colony, who, if he approves, will put the applicant in possession of the land. The applicant must establish his domicile on the plantation, or at the seat of the province, and must put the concession under cultivation, within three years in the case of concession of 10 hectares or less and within five years in the case of 10 to 50 hectares, under the penalty of forfeiture of all or part of the land granted. If at the end of this period all the conditions have been complied with, the holder of the concession is granted a definite title to his land.

Bleekrodea, AN INDIGENOUS RUBBER TREE IN FRENCH INDO-CHINA OVER-TAPPED BY NATIVES.*

In actual practice, however, no rubber estates of any consequence are ever granted gratuitously in French Indo-China. In the case of tracts of more than 50 hectares the land is sold at public auction. Application is made in the same way as for a free grant, and the notice is the same, except that it must also be published for two months in the "Bulletin Administratif" of the colony and the "Moniteur des Provinces." A similar committee meets and fixes the price of the land and other costs. The applicant may establish his residence at the capital of the protectorate instead of either of the places mentioned in the preceding paragraph, and the reports and specifications (*cahiers des charges*) must be approved by the governor in council. After approval notice must be given, from 15 days to a month in advance of the sale, by placards printed in French and in the native language of the district, naming the day, hour and place of the sale. These placards must be posted (1) on the door of the office of the administrator of the province, (2) at the town hall of the village, (3) at the town halls of neighboring villages and (4) in the government offices at Saigon. Notice must also be published in the "Bulletin Administratif" and the "Moniteur des Provinces." All persons wishing to bid on this land must deposit a sum equal to one-fourth of the minimum price when this amount exceeds 100 piastres, which sum will be returned to all except the successful bidder. All terms, conditions and reservations are fixed by the specifications (*cahiers des charges*) signed by the investigating committee and by the applicant or someone holding his power of attorney. The purchase price is paid by the successful bidder in two instalments—one within 20 days of the sale, the other a year later. Upon the fulfilment of all the conditions of the *cahiers des charges* a definite title is granted by a special decree of the governor in council. The price paid in the past for rubber lands sold at public auction has varied from 50 cents to 5 piastres per hectare.

In the case of rubber lands, all grants, whether by free title or

*The *Bleekrodea Tonkinensis*, indigenous to Indo-China, if properly tapped, yields a quickly-coagulating latex. The caoutchouc, when separated from impurities, is pronounced of excellent quality, and has sold at 70 to 80 per cent of current prices for fine Para. The natives hack the trees so ruthlessly as to prevent proper flow of the latex, and frequently to such extent as to endanger the life of the trees.

Kilogram = 2.2 pounds. Hectare = 2.47 acres. Franc = 23.8 cents. Piastre = about 50 cents.

by public auction, are made under certain conditions of cultivation. In all grants up to 500 hectares, one-tenth of the grant must be planted each year with at least 120 rubber trees per hectare, so that half the grant is under rubber cultivation at the end of five years, under the penalty of forfeiture of all or part of the estate. This time is extended to ten years in the case of grants exceeding 500 hectares. For the remainder of the concession the holder may leave it in waste land or pasturage or plant it to rice or other cultures. But a definite title will not be granted until half the plantation is under cultivation. An administrative committee visits each grant in November of each year to see that all these terms are complied with.

For the first seven years a rubber grant is exempt from land tax. At the beginning of the eighth year one-tenth of the estate is subject to the impost levied on the first class of "various cultures" (2.75 piastres per hectare), and the uncultivated half is subject to the impost on the third class of various cultures (48 cents per hectare). After the tenth year one-half of the estate is subject to the first-class tax, the other half to the third-class tax.

All these terms and conditions are applicable to foreigners under the same conditions as to French citizens or colonists.

Rubber lands, planted or unplanted, may also be purchased of private individuals from time to time. During the past year several small plantations were offered for sale. The foreigner should be wary about purchasing a small estate, for rubber production in the past has been largely an experiment, and there has been some reckless tapping, especially on the smaller plantations. The larger estates are generally held by joint-stock companies. Their shares are sometimes offered for sale by the notaries of Saigon through the columns of the local papers and especially those of the "Bulletin Financier de l'Indochine." At present it is practically impossible to purchase stock in the better plantations.

A few cases may serve to illustrate the prices at which these plantations have been sold or offered for sale during the past year. The most important deal in rubber plantation property since the beginning of the European war was the sale in May, 1915, of the plantation of Tan-thanh-dong. One of the leading stockholders of this firm was a German; so the firm was dissolved and the property sold. The amount received was 225,000 piastres. This was considered a very low price; but the sale took place before the phenomenal rise in the price of rubber and under conditions which may have restricted the number of bidders and limited the amounts offered. In November, 1915, a small plantation near Saigon was offered for about 30,000 piastres. This plantation consisted of 450 hectares, of which 150 hectares were planted with 50,000 trees a little more than five years old and ready to be tapped, a nursery containing more than 150,000 young trees and some timber and buildings. While these cases may have some significance, they do not indicate the prices at which the best rubber plantations are now held.

CLEARING AND PLANTING.

Some of the older plantations were located on cultivable or prairie land; but in the red soil region the clearing of the plantation is a more serious problem. The vegetation is tropical and dense, and the stumps and roots must be removed or in the moist, hot season they will furnish a hotbed for mold and other plant diseases. In spite of the cheapness of native hand labor (10 to 20 cents per day), the clearing of a plantation sometimes costs as much as 25 piastres per hectare [over $5 per acre]. However, the vegetation is less dense, the rainfall less constant and the cost of clearing less expensive than in the more tropical climate of neighboring rubber producing countries.

Before the plantation is ready, a small tract of land is prepared as a nursery. Here the seeds are planted, generally toward the end of the rainy season (September to January). The young plants are sheltered from the sun during the dry season and at the beginning of the rainy season (May or June) they have attained a height of 1.50 to 1.80 meters [5 to 6 feet] and are ready to be transplanted. Holes are dug 80 centimeters to 1 meter [32 to 40 inches] in depth and wide enough to accommodate all the roots. On the earlier small plantations the trees were planted very close together. The larger plantations—Xatrach and Suzannah—at first adopted 4½ by 5 meters; but this distance was found too small, and the later plantations have generally left a space of 6 or 7 meters between trees.

CARE OF THE PLANTATION: DRAINAGE, CULTIVATION, IRRIGATION, FERTILIZATION.

The question of drainage is sometimes an important one in Cochin China; for the whole delta region is subject to inundations from July to November, while in some parts of Cochin China the rainfall from May to October, inclusive, averages over 20 inches per month, and during some months it is sometimes as great as 30 inches. Up to the present time no precautions have been found necessary against the invasion of the waters of the Mekong and other waters coming from lower levels, and it is unlikely that any such precautions will ever be necessary, because most of the good rubber lands are somewhat higher than the flooded delta district. But it has been found necessary on nearly all these plantations to provide ditches and sometimes large reservoirs for the drainage of excessive rainfall or the overflow of neighboring streams during the long, wet season.

The soil between the trees is kept soft by plowing and kept clean by constant weeding. The larger plantations have steam plows of 60 to 100 horse-power but the smaller ones use native wooden plows or ordinary American steel plows drawn by native cattle or *carabao*. The weeding is generally done by hand.

The dryness of the months from November to April, and especially from January to March, makes irrigation necessary on nearly all the rubber plantations of Cochin China. The rainfall during these months averages as low as 2 inches per month. Sometimes there are months with no rain, but this is not common; and the uniformly cool nights during this season combined with the always humid tropical atmosphere provide a little moisture by condensation. Water can often be stored during the rainy season. At any rate, streams are abundant and underground veins are everywhere near the surface. Ditches and reservoirs, useful for both drainage and irrigation, are found on practically all the rubber plantations. A few of the smaller plantations employ stationary hand-pumps or movable double-balance, two-cylinder, suction drainage pumps of 4,000 or 5,000 gallons capacity per hour. On the larger plantations the type of pump most in use is a mounted centrifugal, gas or petroleum motor-pump of 10,000 to 50,000 gallons per hour. The type and make of pump used varies with conditions, but Worthington pumps of various styles find a comparatively good sale.

Up to the present time the use of fertilizer has been very small and practically confined to some of the older gray soil plantations and the nurseries. The substances used have been stable manure, oil cake, malt, azote, potash, phosphates and superphosphates. On the red soil plantations nothing but stable manure has been used. The larger plantations have small herds of cattle and employ the manure in the nursery and around the roots of the young trees. The time will undoubtedly come when the use of a small amount of fertilizer will be necessary to supply the lacking soil constituents discussed in a previous paragraph of this report.

TREE ENEMIES AND DISEASES: NEW PLANTS AND SEEDS.

As has been stated in a preceding paragraph, the principal enemies of the rubber tree in Indo-China are water, drought and typhoons. This region seems to be singularly free of rubber diseases. The long, dry season has its drawbacks, but it seems to insure the trees against mold and similar maladies common to other rubber regions of the more tropical Orient. There has

never been even a slight epidemic of any kind in the rubber region of Indo-China.

At first seeds and even plants were imported into Cochin China from Ceylon, Singapore and Java; but the presence of cryptogamic diseases in the rubber trees of these districts, led to a decree in 1910 prohibiting the importation of *Hevea* plants into Indo-China and providing for the disinfection of imported seeds. Since that time new plantations have generally purchased their initial plants or seeds of the Belland, Ong-Yem and other earlier plantations.

SECONDARY CULTURES: USE OF MACHINERY.

Secondary cultures do not yet form an important element in the rubber plantations of Cochin China. A little rice and sometimes maize is raised for the employes and the stock, and a certain amount of land is devoted to pasturage. The amount of land given over to these purposes will necessarily increase when land is worn and the need for fertilization with stable manure or by turning under a crop becomes more pressing. Cocoanuts and other native fruits are often raised, especially on the small native plantations. The Locninh plantation has about 300,000 coffee plants, the Xa-cam plantation about 115,000, the Delignon plantations in Annam about 125,000, and other plantations a smaller number, making in all about 550,000 coffee plants. A small plantation in Cochin China has about 11,000 cashew trees, one in Annam about 10,000 kapok plants and another raises annually several hectares of Soya beans.

The cultivation of these secondary cultures in connection with that of rubber demands a variety of agricultural implements. The smaller plantations use native hand-made plows, harrows, hoes, spades, etc., but the larger plantations use modern machinery, such as traction plows, harrows, rollers, trucks and mowing machines. The motive power is sometimes native cattle and *carabao* and sometimes steam. With the development of this industry, both intensively and extensively, there will come a greater demand for agricultural machinery.

Agricultural machinery is sometimes purchased in France by the Paris representative of the plantation, but it is generally bought of local importers. In either case it is imported from France, although much of the machinery is of American origin. The leading Saigon importers and dealers are Descours, Cabaud et Cie, Graf, Jacque et Cie, and Bonnefoy Freres. The directors of these firms are also directors of large rubber estates in Cochin China.

TAPPING AND GATHERING.

The rubber trees of the gray soil plantations are generally tapped at the age of five or six years. By this time they have attained a height of 15 or 20 feet and a circumference of about 18 inches. On some of the red soil plantations the trees reach this size during the fourth year and are tapped at this age. The half-herringbone method is almost universally employed. The trunk is usually divided into fifths and two of these parts tapped at once over an up-and-down extent of about 20 or 30 inches per year. The tapping is generally done every day—except during the months of January and February—the middle of the dry season, when the trees are given a rest.

The table given below shows the volume in cubic centimeters of latex produced each month by groups of selected trees on the experimental station at Ong-Yem during 1910:

Month.	10 Trees.	20 Trees.	42 Trees.
January..*cubic centimeters*	1,713	895	Not tapped
February	1,253	4,159	Not tapped
March	1,520	9,821	3,865
April	1,740	8,962	15,225
May	1,557	9,034	15,110
June	5,595	9,720	14,138
July	4,795	7,680	11,585
August	7,194	11,073	12,330
September	5,635	12,312	11,586
October	7,632	10,164	12,593
November	7,730	12,513	11,892
December	7,439	9,010	12,962

Experiments made at the same time show that the weight per cubic centimeter of the latex is a little greater during the season of heavy production but that it contains a smaller percentage of rubber than during the dry season. The density of this latex varied from .88 to .98 grams per cubic centimeter, the amount of dry rubber produced per gram of latex varied from .30 to .72 grams. Making due allowance for unusual conditions, these tables give a fair composite picture of the relative productivity of the different seasons of the year.

The latex is gathered daily. A native can tap from 300 to 400 trees a day and gather latex from about an equal number. At the Suzannah plantation, where native labor is very efficient, the director hopes to bring this amount up to 600 trees per man and 450 trees per woman. Since the beginning of rubber cultivation in Cochin China the average annual rubber production per tree has been about three-quarters of a kilo; but the old Belland plantation claims an average of 2½ kilos for 1915, and some portions of the newer plantations are said to average over a kilo per tree. As the above tables will show, selected groups of trees at Ong-Yem have produced over 5 kilos each per year. In considering these figures it must be borne in mind that up to the present time most of the trees tapped each year are new and that the trees have been planted too close together to obtain the best results.

METHOD OF PREPARATION.

The methods of preparation vary slightly on the different plantations. The first step is to strain the latex. To prevent the too rapid coagulation a little water is sometimes placed in the receptacles in which it is collected. The latex is strained through a fine sieve, which collects all the leaves and other impurities, and is then placed in porcelain-lined basins about 8 by 12 inches and 3 or 4 inches deep and allowed to coagulate. Sometimes a solution of acetic acid is added to assist the coagulation.

The coagulated mass is then passed several times through one or more sets of rollers until it is pressed into thin sheets. Some plantations have a heavy set of smooth rollers which merely press the rubber into sheets and smaller rollers which impress a design upon them. The rollers are generally of steel or zinc. One of the leading plantations has employed copper rollers, but is considering a change due to the objections of prospective purchasers of the product. When finished the sheets are about 11 or 12 inches wide, 20 to 24 inches long and ⅛ to ¼ inch in thickness. These sheets are then taken to the drying room.

The strainings of the latex, the lumps found on straining, the water left in the cups, basins and other receptacles and the foam and other skimmings after straining are prepared into various grades of rubber and "scraps."

The rubber is sometimes dried by natural air in a closed room, sometimes dried with hot air and sometimes simply exposed in a dry place to the tropical atmosphere. The first of these methods is followed at Xatrach, the second at Suzannah and the third at the Belland plantations and in general at all the smaller plantations. The Suzannah plantation has a $14,000 drying plant, consisting of an "Ouragan" mechanical drier operated by a 75 horsepower motor. The rubber produced on this plantation is ready for market within ten or twelve days after leaving the tree, while on other plantations of Cochin China the preparation of the rubber requires from twenty to thirty days, according to the season. Some plantations smoke the sheet rubber in the closed room by conducting wood-smoke into the room through a pipe; others by the addition of a little creosote to the latex.

(To be continued.)

The Chemical Convention and Exposition.

THE fifty-third annual meeting of the American Chemical Society was held in New York City the last week of September, and in point of attendance and interest far exceeded any previous meeting. More than 2,000 members registered at the Chemists' Club during the week. Meetings were held on the first five days of the week, some of them being at Columbia University, others at the Chemists' Club, the New York College of Pharmacy, and the Grand Central Palace. At this latter building was held during the week the Second National Exposition of Chemical Industries, 200 firms and companies making exhibits.

During the forenoon of Monday, at the Chemists' Club, a committee was busy registering the names of visiting members, a large number of whom were accompanied by their wives. To each was presented a badge which was an open sesame to most of the functions on the program. At this club, rooms were set apart for visiting ladies, a large committee of ladies having charge of this portion of the program. Here also the reception rooms and the large dining room were thrown open to members and visitors, while the chairmen of the various committees were on hand to fulfil the duties assigned to them.

The formal opening of the exposition was held at the Grand Central Palace on Monday afternoon, the opening address being by President Charles H. Herty, and other speeches by Dr. Francis A. J. Fitzgerald and Dr. Arthur B. Daniels.

On Tuesday, at the general meeting of the society at Horace Mann Auditorium, Columbia University, J. Merritt Mathews, president of the New York section of the American Chemical Society, presided, and addresses of welcome were made by Dr. Haven Emerson, Health Commissioner of the City of New York, and President Butler, of Columbia University.

In accordance with the general program the various divisions held meetings at which papers were read pertaining to that special portion of the industry to which the division was devoted. Among the papers read in other divisions than the Rubber Section which would be of interest to the readers of this journal, and which, therefore, may be accorded attention in the coming number, are: "Showerproofing," by E. L. Mack; "Vulcanization of Rubber," by D. Spence; "Aniline and Other Coal Tar Products," by George P. Adamson, and "Bureau of Mines Studies on Occupational Diseases," by Dr. W. A. Lynott, Washington, D. C.

The evenings were set apart mainly for social functions. On Tuesday a reception was held at the Hotel Astor, where members, guests, and members of the American Electrochemical Society and Technical Association of Pulp and Paper Industry were present. On Wednesday evening the Electrochemical Society held a smoker, members of the American Chemical Society being their guests. Thursday evening a grand banquet was held at the Waldorf-Astoria. Friday afternoon and evening were devoted to visiting the exposition at the Grand Central Palace. Meanwhile a special program was laid out for the visiting ladies, this being in charge of an able and efficient committee.

Taken altogether, the convention was most assuredly the best in the history of the society. In the completeness of arrangement, great credit is due to the officers and committees having the details in charge, including President Charles H. Herty, Secretary Charles L. Parsons, the chairmen of the various meetings; Carl L. Alsberg, Edward Bartow, J. E. Breckenridge, C. G. Derick, H. E. Howe, Irving Langmuir, J. H. Long, L. M. Tolman and L. E. Weber, and the following committees:

EXECUTIVE. J. M. Matthews, chairman; Frank Hemingway, treasurer; L. H. Baekeland, H. R. Moody, P. C. McIlhiney, E. G. Love, T. J. Parker, Allen Rogers, T. B. Wagner, A. E. Hill, C. M. Joyce, Chas. F. Roth, secretary.

FINANCE. L. H. Baekeland, chairman; Carleton Ellis, J. B. F. Herreshoff, E. G. Mackenzie, T. B. Wagner.

REGISTRATION. H R. Moody, chairman; Chas. F. Bacon, D. D. Berolzheimer, Charles A. Lunn, F. J. Metzger, A. Nagelvoort, A. C. Neish.

RECEPTION. P. C. McIlhiney, chairman; J. Alexander, S. R. Church, H. M. Ittner, R. W. Moore, J. C. Olsen, Emil Schill, M. Toch, H. A. Metz, H. Schweitzer, E. G. Nellis, V. G. Bloede, J. G. Bergquist.

ENTERTAINMENT. E. G. Love, chairman; H. A. Baker, T. W. Pritchard.

HOTEL. T. J. Parker, chairman; T. R. Duggan, J. M. Weiss.

PRESS AND PUBLICITY. Allen Rogers, chairman; Ellwood Hendrick, B. C. Hesse, T. J. Keenan, A. Nagelvoort, E. F. Roeber, Charles F. Roth.

THE RUBBER SECTION.

THIS was the first meeting to be held by the rubber chemists for a long while, and the large attendance seemed to prove that this section of the Chemical Society is capable of doing some real constructive and research work in the rubber industry.

The transactions of this section were held at Rumford Hall at the Chemists' Club. Dr. L. E. Weber, of Boston, Massachusetts, was chairman, and Dr. John B. Tuttle, of Washington, D. C., secretary. The papers included the following:

"A Revision of Wesson's Method for the Direct Determination of Rubber," by J. B. Tuttle and L. Yurow.

"Wet Combustion in the Nitrosite-Combustion Method for the Direct Determination of Rubber," by L. G. Wesson and E. S. Knorr.

"The Aniline Method for the Determination of Fillers in Rubber Goods," by Otto H. Klein.

"Increase of Resins in the Vulcanization," by L. E. Weber.

"The Second Report of the Joint Rubber Insulation Committee," William E. Del Mar, secretary.

"The Rubber Chemist and the Rubber Trade," by Henry C. Pearson, Editor of THE INDIA RUBBER WORLD.

CHANGES OF RESINS IN VULCANIZATION.

Dr. L. E. Weber's paper had been announced under the title "Increase of Resins in the Vulcanization," but in his introductory remarks, he pronounced this somewhat of a misnomer, because, under the conditions under which the experiments were carried out, an actual decrease in the resin content resulted in the vulcanization process in the majority of cases. Dr. Weber said:

It is a generally accepted fact that in the course of vulcanization the resins show a material increase, the term resins being a convenient abbreviation of what is more accurately referred to as the organic acetone extract. The amount of this increase is said to vary, but is usually in the vicinity of 1 to 1½ per cent. That is to say, the rubber will show an actual resin content of somewhere between 4 and 5 per cent, whereas before vulcanization its resin content was between 3 and 3½ per cent. The nature and cause of the increase is not understood, in fact the whole subject has received very little attention. That this is so is rather to be wondered at, especially when one considers the fact that the resin content is our most reliable guide in recognizing the presence of high grade rubbers.

It has without doubt been observed on numerous occasions that rubber compounds very rich in rubber do not show this increase, their resin content being approximately the same before and after vulcanization. It therefore seems reasonable to suppose that certain of the mineral ingredients which are present in the more highly compounded stocks are responsible for the

increase, and it was in the hope of determining which of these minerals were effective that the experiments enumerated below were carried out. In order to observe more clearly the effect which the various minerals exert on the resins during vulcanization, the more common minerals were added in varying amounts to a standard rubber compound and the increase in the resin content determined analytically. The basic compound consisted of 100 parts of rubber and 8 parts of sulphur. A series of compounds were mixed up containing rubber and sulphur in the identical proportions but with varying percentages of zinc oxide, litharge, lime, calcined magnesia, white lead, barytes and whiting. These minerals were added in percentages based on the rubber. For instance, a typical compound would read as follows:

Rubber, 100 parts; sulphur, 8 parts, and litharge, 5 parts.

Or again:

Rubber, 100 parts; sulphur, 8 parts, and zinc, 20 parts.

In this manner the effect produced by the various minerals could be noted readily with a minimum of calculation. Of course, in each case the resin content is based on the actual amount of rubber present. For the sake of convenience all samples were cured in the press at 45 pounds pressure for various periods, depending on the nature and amount of mineral added.

The following table shows the changes in the resin content of the crude rubber, the crude rubber vulcanized with sulphur alone, and the compounds containing rubber, sulphur and minerals in various proportions.

Crude rubber gave resin content of 3.54 per cent.

100 parts rubber and 8 parts sulphur gave resin content of 3.53 per cent, based on rubber present. Additions of minerals as follows gave percentages based on rubber present:

5 per cent litharge gave resin content	3.6 per cent
10 per cent litharge gave resin content	2.8 per cent
20 per cent litharge gave resin content	2.7 per cent
50 per cent litharge gave resin content	2.1 per cent
20 per cent zinc oxide gave resin content	3.4 per cent
50 per cent zinc oxide gave resin content	3.1 per cent
20 per cent white lead gave resin content	4.0 per cent
20 per cent litharge and 50 per cent zinc oxide } resin content	5.6 per cent
5 per cent lime gave resin content	2.5 per cent
5 per cent calcined magnesia, resin cont.	2.6 per cent
50 per cent whiting gave resin content	3.5 per cent
50 per cent barytes gave resin content	3.7 per cent

These figures are indeed surprising and directly in contradiction to what one would have expected. There is a much more marked decrease in the resin content than increase. To be sure, barytes and whiting are without effect one way or the other. This is more or less what one would have expected in view of their inert action in the vulcanization process. The addition of 20 per cent of white lead is the only case where there has been any appreciable increase. Even in this case the increase is so very small as to just lie outside the limit of analytical error. It is interesting to note the action of litharge. When added to the extent of only 5 per cent no change in the resin content is observed. There is a marked decrease on the addition of 10 per cent, which becomes more marked as the amount added increases up to 50 per cent. Zinc also seems to follow the same rule in that the resin content decreases with the amount added, whereas in the case where zinc oxide and litharge were both present, decrease in the resin content is about the same as would have been produced by the litharge alone. The cases of lime and magnesia are very interesting, even the relatively small amounts of 5 per cent producing very marked decreases.

An explanation of the above observations is hazardous, in view of the limited amount of experimental data. It is at once apparent, however, that the substances which bring about decreases in the resin content are all of a basic nature, and the two materials which are particularly active, namely, lime and magnesia, have a relatively strong basic nature. In view of the known fact that the resins from *Hevea* rubber are in part saponifiable, it seems reasonable to suppose that salts have been formed in the vulcanizing process between the saponifiable resins and the mineral oxides, with the formation of acetone insoluble metallic resinates. It is not improbable that a connection exists between the action of these minerals on the resins and the accelerating action which the former produce. This seems the more probable, in view of the fact that the elimination of the resins from the crude rubber practically inhibits vulcanization.

As already stated, the above samples were all vulcanized in the press, a fact which should be clearly borne in mind. The samples are at present being vulcanized in live steam and will doubtless show increased resin content on analysis. To be sure the introduction of live steam brings forth another factor into the vulcanizing process. From the above figures, however, it would seem, in the presence of metallic oxides, as if the primal tendency of vulcanization were rather to decrease the resin content than to increase it, probably owing to the formation of metallic resinates.

DR. LOTHAR E. WEBER.

HENRY C. PEARSON.

DR. J. B. TUTTLE.

THE RUBBER CHEMIST AND THE RUBBER TRADE.

Mr. Pearson's address, in brief, was as follows:

As a text to my address I want to use a brief letter received this month from an old-time rubber superintendent—a man who has had an unusual measure of success, who is absolutely honest but thoroughly of the old school:

TO THE EDITOR OF THE INDIA RUBBER WORLD.

Dear Sir—A considerable space of every edition of your valuable magazine is given to "What the Rubber Chemists Are Doing."

It has been my privilege to talk with several managers and invariably each has a problem. When asked why not let the chemist work it out, they answer they have tried and failed to find the solution. Now is it true that chemists are of any advantage or only a fad, same as the game of efficiency that has been taken up by many, but is being gradually dropped? Chemistry and efficiency have their place in the world's work, but a good practical man

can make a rubber factory pay larger dividends than any corps of chemists running around with abstracted reasonings. If there is anything that gets the "goat" of a superintendent, it is to have some half-cooked chemist tell him how to run the factory. Very truly yours,

This naturally leads one to ask exactly what the status of the chemist in the rubber industry has been, what it now is, and is to be, and incidentally the status of the so-called practical man.

The beginnings of the industry, of course, were coincident with the discovery of vulcanization. Offhand one would say that Charles Goodyear was the discoverer—and he was, as far as the printed page goes. The fact, however, that before Goodyear's time the Indians up the Amazon were mixing gunpowder (because of its sulphur content), with rubber latex, spreading the mixture on cloth and exposing it to the strong rays of the sun, would really suggest that they had discovered vulcanization without knowing it. As they made no claim to such discovery, perhaps it would be well to let them go into the discard.

The discovery of vulcanization, as far as Charles Goodyear went, was the result of hundreds of experiments. It was the fortunate result of a constant groping after an ideal by an exceedingly pertinacious experimenter. That he didn't know exactly what he had done is proved by the fact that he patented the "triple compound," composed of rubber, sulphur and white lead and that for years after white lead appeared in every compound.

The English discoverer of vulcanization, Thomas Hancock, another practical man, worked for years trying to produce rubber compounds that would not get sticky in hot weather nor stiff in cold, and finally, securing through a friend named Brockedon a sample of the American vulcanized product, discovered sulphur on the surface. As a result he invented the type of vulcanization known as the sulphur bath. That is, he melted sulphur, immersed rubber in it, raised the heat and secured vulcanization.

About the same time Alexander Parkes, a chemist, produced a process of vulcanizing rubber by using chloride of sulphur; in other words, invented the cold cure.

In Germany during the years of the American and English search after vulcanization, Dr. Leudersdorff, of Berlin, through his own initiative, compounded rubber with sulphur, treated the surfaces with powdered sulphur, and at times got results that looked like vulcanization. He did not at that time appreciate what he had, but without doubt he would eventually have discovered vulcanization, even if the rest of the world had remained ignorant of it.

About the same time a Dutch apothecary named Jan Van Geun, who lived in Haarlem, put upon the market a rubber tubing that did not get stiff in cold weather, was not softened by heat and withstood acid. What his process was nobody knows, but the evidence goes to prove that he did discover vulcanization.

The matter thus stands, without counting the Indian, that the world's vulcanization of india rubber was discovered by two practical men, two chemists and a druggist.

American rubber manufacture divided itself into three periods. The first was of pioneering. In spite of the fact that vulcanization had been accomplished, the early manufacturers were a long way from being able to produce rubber goods in quantities, without a percentage of spoiled goods and seconds that would put any present manufacturer out of business. The early pioneers were Candee, Meyer, Poppenhusen, Day, Hartshorn, Hodgman and Hayward. None of these men were chemists, but they tackled their varied problems with undaunted courage and succeeded in spite of many failures. The next generation, which embraced the well-known names of Converse, Forsyth, Cheever, Spadone, Bourn, Banigan, Hood, Goodrich, McClymonds, Dale and Cowen, inheriting the compounds and processes of their predecessors, began to appeal to machinists and mechanical engineers to assist them in mechanical problems, and occasionally to chemists. In spite of this, the man who had worked up through the various processes, the practical man, was esteemed more than any other individual. It is only proper to say that he often possessed a high degree of skill, and that through his experience he was able to avoid many errors, and that his results showed in earnings that were sometimes remarkable. The old-time practical man was a czar when it came down to the question of compounding. In many cases he alone possessed the secret formulæ, and if he left an employer he carried them with him.

To digress a moment, it might be interesting to cite one of the formulæ used by all of the great shoe factories during the early days. The upper compound, besides whiting, litharge, sulphur and tar, which were more or less necessary, contained white lead, lime and barytes. Just why, nobody knew. These ingredients, with the exception of the tar, were weighed out in quantity into a huge bin and then run through an old-fashioned burr mill for fineness. They were not known as compounds but as paints.

It must not be thought, however, that the practical men did not produce anything. They were the producers of excellent mixers, masticators, tubing machines, calenders and spreaders. They also designed scores of machines for the manufacture of belting, packing, hose, insulated wire and so on. When competition became fierce, they made bigger and better machines and cheapened their compounds where they could.

They also produced many valuable compounds and processes. Of these the most notable are the mechanical process for rubber reclaiming invented by Clapp, and the acid process invented by Mitchell, Bourn and McDermott. None of these men were chemists, although very early in his career as a manufacturer of reclaimed stock Mr. Mitchell employed chemists in consultation. Up to 1900 the chemist had made hardly any impression at all upon the rubber trade.

The writer was so impressed with the future usefulness of the chemist in rubber mills that he took occasion when opportunity offered to talk with the leaders of the trade, so as to learn their attitude regarding the possible value of a laboratory and a chemist in connection with their own problems. E. S. Converse stated that they had employed chemists, but that the cost to their company had been greater than any value received from their work. Joseph Banigan said, in a jocular vein, that "he had no use for chemists, druggists or apothecaries." L. K. McClymonds said that the value of the chemist would be simply in determining the purity of compounding ingredients, and that he hired a competent superintendent to look after that. Henry C. Morse said that he would give more for the guess of his old superintendent, Leigh, than for all the certainties produced by the best chemist on earth.

In those early days only two men took the chemist seriously. One was James B. Forsyth, of the Boston Belting Co.; but he had the misfortune to deal in secret with a man whom he believed to be a chemist, but who was really a charlatan and an expert user of chemical terms. It was a long time before Mr. Forsyth discovered that he was being fooled. Dr. Benjamin F. Goodrich, founder of The B. F. Goodrich Co., was the other man who thoroughly believed, almost from the beginning, that rubber manufacture was as much a chemical problem as a mechanical one. Very early he employed a German chemist, and indeed proposed to the writer that he come to Akron to be the president of a research laboratory and chemical plant, offering a block of stock, and saying in his enthusiastic manner, "I will make you rich." As I then had visions of starting a rubber paper, I refused something for which perhaps the Goodrich company should tender me a vote of thanks.

It was not until a young chemist from Boston, through a reclaiming process that he invented, made a spectacular success for himself and for his company, followed by an equally spectacular success in extracting rubber from low-grade gums and making much more money for himself and for his company, that rubber manufacturers in the United States really awoke to the fact that the chemist could be anything besides a dreamer of dreams and a tester of the purity of compounding ingredients.

Looking at the rubber trade of the United States of today, it is absolutely impossible to even indicate how much chemists have done in rubber lines. Their work in producing reclaimed rubber of better types than ever before known, and in handling stock that at one time went under the furnace, is a matter of common knowledge. So, too, are the various extraction processes that have rendered resinous rubber, such as guayule and Pontianak, of so much value to the trade. Also, in the speeding up of the great variety of compounds by new and harmless accelerators, their work has been beyond praise. In the rearrangement of compounds, in the production of new and valuable ones, and above all in the testing of everything that goes into the factory and goes out of it, they have revolutionized the old rule-of-thumb methods. So true is this that every mill of any note today has either its own laboratory or leans hard on some outside consulting laboratory. Nor would any manufacturer today, once having employed chemists, think of doing without them any more than he would think of eliminating steam or electricity in his power plant.

It is a pity that time does not permit me to name the many eminent chemists—English, German, French and American—whose research work as set forth in books, pamphlets and essays constitutes some of the most valuable of the world's technical literature. Such a list, with an adequate description of the work done, would, however, far exceed the limits of this paper.

The fact being, then, that the chemist has not only established himself, but has practically taken over the industry that should have been his from the beginning, leads one to ask, "What of the future?" Are the problems all solved? To an imaginative man it doesn't seem that much more than a beginning has been made. The remembrance of the beginning of "Bakelite," a real competitor for hard rubber, and of the "Cravenette" process an equally real competitor of rubber clothing, is exceedingly suggestive. Rubber is and always will be an expensive commodity. It is individual in its extreme elasticity and resiliency. Why, then, where the plasticity of rubber is alone made use of, as in clothing, belting, packing, hose, matting and a score of other things, should not some other plastic, waterproof of course, dispossess it, and isn't the chemist the man who will doubtless accomplish that? That would give much more rubber for the millions of automobile tires that are in sight for the next few years. It would also leave sufficient rubber for thread, elastic bands, and goods for which no other plastic is fitted. There is a suggestion, also, of a rubber compound for footwear that will be waterproof from the outside and will allow insensible perspiration to work out from the inside. Why, too, as long as rubber sheets can be made absolutely inextensible, should they not be a compound for tires, to do away with the necessity for strengthening fabrics, either woven or cord?

Again, looking at the rubber processes from a distance, it seems a bit awkward that so much heat and pressure and expensive machinery should be needed to accomplish vulcanization. Why should not the chemist of the future add some substance to the rubber mass which in the course of a few hours will effect vulcanization without the application of heat? Were this possible, its value in colored rubber goods would probably be incalculable. If this compounding vulcanization did not darken the mass, how easy it would be to make hard rubber goods pure white—to rival and even surpass celluloid and "galalith" in all their gaudy colors. Or if the chemist finds himself unable to do this, let him recall the fact that in the East there is a rubber tree the latex of which, on coagulation, is bright blue. It is his privilege to discover what gives that particular color, and by applying it to the great orchards of the Far East, produce rubber of all the colors of the rainbow.

Coming down from the realms of imaginary triumphs to those directly before the chemist, there are in his own factory quite enough and more than he can intelligently solve in years to come—those are individual. For the trade at large there is the standardization of almost everything that goes into the mill and comes out of it, and then, for our own country's preparedness, the production of a cheap, high-grade, synthetic rubber.

The succeeding papers were confidential communications that will not be released until further experiment has been carried on and the results checked up. Owing to lack of space the rest of the essays will appear, however, in the November issue of THE INDIA RUBBER WORLD. An exceedingly interesting symposium, led by Dr. Geer and participated in by some 20 other rubber chemists, will also be treated at length in the November issue.

THE CHEMICAL EXPOSITION.

THE National Exposition of Chemical Industries was held at the Grand Central Palace during the week, and nearly two hundred diaplays filled the main floor and gallery of the great exhibition hall. Of these, comparatively few were specially devoted to the rubber industry, but those that were included several of the most striking variety.

By far the largest exhibit was that of the Buffalo Foundry & Machine Co., Buffalo, New York. This occupied the entire end of the main hall, and included an installation of "Buflovak" apparatus—a 1,600-gallon nitrator for manufacturing nitro-benzol; a 2,500-gallon caustic box for making caustic soda; a 700-gallon sulphonator; an 8-foot horizontal type evaporator; vacuum drum dryer in operation; vacuum surface condenser; two-stage vacuum pump; vacuum shelf dryer; fusion kettle, equipped with stirring device; autoclave, crystallizing pan and a fully equipped nitric acid plant. All these huge pieces of apparatus bore their names in bold lettering. Around the booth were transparencies showing photographs of apparatus made by this company.

J. P. Devine Co., manufacturer of vacuum dryers, Buffalo, New York, exhibited a complete installation of a double drum vacuum dryer, the first one built in America. This included, besides the dryer, a surface condenser and motor drive. It is especially designed for drying, in vacuo, viscous heavy liquors and pastes. Another notable feature of the exhibit was a high pressure cast steel autoclave built to withstand a pressure of 1,000 pounds to the square inch. The Devine nitrating kettle was another feature of the exhibit, as was also a series of photographs of various forms of dryers, etc.

The Werner & Pfleiderer Co., Saginaw, Michigan, had on exhibition a number of their kneading and mixing machines, including the rubber masticator for dry compounding, which was described in THE INDIA RUBBER WORLD of September 1. There was also shown a huge vacuum type "Universal" kneading and mixing machine with a heavy double agitator, and a copper bowl rapid dissolver, machines well known in rubber and chemical manufacturing circles.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, devoted its space mainly to an exhibit of controllers for electric motors. Among these was a Type F automatic control for alternating current motors, and a Type CS motor control.

The Bristol Co., Waterbury, Connecticut, showed recording instruments, including a recording thermometer for vulcanizers, an operation recorder for automobile tire presses which gives upon the traveling sheet 20 distinct operation records, and a new wet and dry bulb recording thermometer showing continuously the moisture content of the atmosphere.

E. I. Du Pont de Nemours & Co. and associated companies, including the Du Pont Chemical Works, Du Pont Fabrikoid Co., Fairfield Rubber Co. and The Arlington Co., had a very interesting exhibit of their products, including several chemicals used in the manufacture of rubber goods, their "Fabrikoid" for upholstery purposes, and rubberized cloth made at the Fairfield factory. There was also an exhibit of articles manufactured from "Pyralin," a substitute for hard rubber.

Another substitute for hard rubber, "Bakelite," was shown in the exhibit of the General Bakelite Co., New York City and Perth Amboy, New Jersey.

The exhibit of The J. H. Day Co., Cincinnati, Ohio, manufacturers of machinery used in mixing and compounding rubber, was most complete and interesting.

The Barrett Co., New York City, was well represented by a large and comprehensive exhibit, showing among other chemical products, toluol, benzol and carbolic acid, that are used by the rubber trade.

The Barber Asphalt Paving Co. had on exhibition among its asphalt products the "Genasco" mineral rubber, which is well known in the rubber trade. The Corn Products Refining Co., New York City, among other articles not used in the rubber trade, showed its well-known rubber substitute "Paragol," which is a sulphonated corn oil used as a filler.

The Luzerne Rubber Co., Trenton, New Jersey, exhibited hard rubber pipes and fittings, stop cocks, etc., for the conduction of acids, and also showed color boxes, photographic tanks, electrolytic cells, check ball valves and acid buckets.

Whitall Tatum Co., Millville, New Jersey, had an excellent exhibit of laboratory apparatus.

The exhibition was well patronized during every day and evening, not only by the members and guests of the American Chemical Society, but also by the general public. Moving pictures devoted to the exhibition of manufacturing and chemical engineering work were shown.

What the Rubber Chemists Are Doing.

THE STABILITY OF VULCANIZED RUBBER AND THE OPTIMUM CURE.

UNDER the above title Dr. Henry P. Stevens, in the "Journal of the Society of Chemical Industry" (August 31, 1916), presents the results of investigations made for the Rubber Growers' Association. The author remarks that in the manufacture of vulcanized goods the greatest care is taken to adjust the conditions of vulcanization to suit the particular compound to be vulcanized. Excess temperature or time will over-cure the product, and it will not age satisfactorily. Pronounced over-curing may exhibit inferior mechanical properties within a very short period of vulcanization, but in most cases the freshly vulcanized compound at first exhibits good mechanical properties, and it is only after a period of months or years that the over-curing becomes apparent by the gradual perishing of the rubber.

Pronounced under-curing also causes gradual deterioration, but the effect is not so marked as with over-cured rubber, and is more easily detected, as the mechanical properties of under-cured rubber are not fully developed.

It is obvious that for each particular rubber compound there must exist certain conditions of vulcanization, principally time and temperature, which will produce the optimum results. This cure has been termed the "optimum" or "perfect cure."

Schidrowitz and Eaton and Grantham have published their work on this subject. Each of these works was undertaken to compare the vulcanizing qualities of raw rubbers and to evolve a standard method of testing. These methods are based on the figures for tensile tests made on simple compounds of rubber with sulphur only, vulcanized for varying periods under constant conditions of temperature.

Eaton and Grantham say "we have always taken as the optimum, that point at which the product of the breaking load per unit cross section and the elongation is a maximum." Strictly speaking, they have taken the final length at rupture; that is, the elongation plus the original length, and multiplied this by the breaking load to give the product. This latter calculation appears to be the more correct.

The corresponding figure obtained by Dr. Stevens, termed "Tensile product," represents the breaking load per unit cross-sectional area of test piece, when the latter is fully stretched, as the volume of a piece of vulcanized rubber does not show appreciable alteration on deformation. The specimen giving the maximum product is held by Eaton and Grantham to be that which has been subjected to the optimum cure. It is obvious that if a number of vulcanizations be carried through with one compound for progressively increasing periods, some specimens may be under-cured, some over-cured and one will lie in the neighborhood of the correct cure, but it would be a mere chance if this last specimen were vulcanized for exactly the period required to produce the optimum effect.

These methods fail to take into consideration the fact that tensile properties of a vulcanized rubber are not constant, but vary with the age of the specimen.

Research work of recent years has shown that vulcanization proceeds after the actual vulcanization process is completed, and that vulcanization takes place, although very slowly, at the ordinary temperature of the air.

Dr. Stevens regards the vulcanization process as a sort of impulse, and the momentum induced carries on the vulcanizing effect after the vulcanization process is complete.

A specimen of vulcanized rubber, if tested at intervals of time over a given period, shows progressive changes during that period. Thus the product of the breaking strain and elongation of a specimen tested the day after vulcanization will usually give figures which are lower than those obtained if the test be made a week or a month later. The term "optimum cure" if it is to have any practical meaning, must connote not only the physical properties of the freshly vulcanized rubber but also its aging.

There is another guide to correct curing, namely, the figure for the coefficient of vulcanization. With many types of compound this figure is difficult to ascertain, even approximately, but in a simple type, consisting entirely of rubber and sulphur, it is only necessary to extract exhaustively with acetone and to determine the sulphur in the residual rubber, expressing the results as a percentage of the raw rubber originally taken.

Dr. Stevens has carried through a comprehensive series of tests with the compound employed by Eaton and Grantham, composed of rubber with 10 per cent of sulphur. In each case the tests were carried out on the same lines as those of Eaton and Grantham, except that the vulcanized specimens were tested at intervals, the last test being put through approximately ten months after vulcanization. The rubbers employed were pale crêpe and smoked sheet rubbers of ordinary commercial quality.

The results of the investigation prove conclusively that a rubber compound subjected to Eaton and Grantham's "optimum cure" is undoubtedly over-vulcanized, or over-cured, and that the word "optimum" is consequently incorrectly applied. If, however, Eaton and Grantham's definition be modified so as to include the aging factor, we have what appears to be a very good definition of the optimum or correct cure. It may be provisionally defined as that cure which gives the maximum figure for tensile product after full period of aging. It is not at present possible to define more exactly the period of aging. With rubber compounded with 10 per cent of sulphur only, the results show that the period should exceed the ten months allowed in the present experiments. Probably two or three years will be required. The vulcanized specimens must be preserved under suitable conditions and should not be exposed to light. It must not be forgotten that the temperature and possibly also hygrometric and other conditions of the atmosphere affect both the aging qualities and the physical tests.

The coefficient of vulcanization can only be taken as an approximate guide to the condition or degree of vulcanization. A figure for the coefficient exceeding 3.50 per cent for a vulcanized rubber and sulphur compound is an almost certain indication of over-curing.

ANILINE OIL POISONING.

In a communication to "The Journal of Industrial and Engineering Chemistry," W. W. Sanders relates the experience of the Goodyear Tire & Rubber Co., Akron, Ohio, with regard to its manufacture and use of aniline oil.

Since November, 1914, the company has manufactured about 1,500 tons of aniline, without a single fatality due to poisoning. This is the result of a persistent campaign to eliminate every possible source of danger and to care promptly for such cases of poisoning as have actually resulted. Men who are working constantly in the aniline plant and who have, in a measure, become immune to the effect of aniline vapor, show bluish lips and skin; the poisoning does not seem to go beyond that stage, and the men are not inconvenienced in any way. The severest cases have resulted from the spilling of aniline, nitrobenzol, or aniline hydrochloride directly upon the skin.

Realizing that poisoning may be caused either by inhalation of vapor or direct contact with liquid, the manufacturing precautions have been based on these two points. The building is provided with suction ventilating fans in the roof. Several 24-inch fans, located in the exterior side wall of the building, play

streams of air directly upon the men while they are at their operating positions. In fair weather the windows are removed, at other times satisfactory floor ventilation is provided. Suction ventilating ducts are led directly to stuffing boxes and iron boring feeders, where there is always more or less escaping vapor. The manufacturing system is closed, so that it is unnecessary for open aniline to be handled. Drinking men are excluded from the operating force. The men are provided by the company with regular rations of milk, with two clean working uniforms weekly per man, and with rubber boots. Shower baths are installed and their daily use insisted upon. Frequent inspection for leaks is made of pumps, valves and stuffing boxes.

The necessity of replacing the stirring paddles in the aniline reducers is the cause of many of the poisoning cases observed. In spite of continued washing and steaming out, there is sufficient aniline saturating the residual iron borings in the reducer bottom to make it inadvisable for men to remain in the reducer for more than a half hour.

METHODS OF ANALYSIS.

IN the article "Select Methods of Analysis of Golden Sulphide of Antimony" published in this department in August, credit was unintentionally omitted. It was condensed from the original in "Le Caoutchouc & la Gutta-Percha," by André Dubosc.

The following article is by the same author and also from the same publication:

SULPHIDES OF ANTIMONY AND THEIR ANALYSIS.

Golden sulphuret of antimony or pentasulphide of antimony is an important factor in the manufacture of inner tubes, druggists' and surgical rubber goods.

The pentasulphide is in non-stable equilibrium and under the increase of temperature, which occurs in the course of hot vulcanization, releases colloidal sulphur, which unites with rubber easier than flowers of sulphur.

This dissociation occurs at 130 to 135 degrees C., leaving as residuary product red trisulphide of antimony, a pigment, giving to the product the beautiful red color sought by the trade.

Red trisulphide under the same conditions, does not give the same results as the pentasulphide. It does not release the colloidal sulphur necessary for vulcanization. At 130 to 135 degrees C., it has a tendency to change into black sulphide. Instead of red goods, brownish unsightly products are obtained.

Under these conditions, one can realize the importance, from a practical standpoint, of knowing the trisulphide content of the golden sulphurets offered by dealers.

The manufacture of golden sulphuret of antimony is much more delicate than many imagine it to be and, even when starting from Schlippe's salts, very minute precautions must be taken to escape changing the pentasulphite or real golden sulphuret of antimony into the almost valueless trisulphide of antimony.

That is what many do not know and it explains the lack of value of some of the products found in the market.

Following are a few analyses of such products offered in the trade, which, in view of their composition, will not give complete satisfaction in vulcanizing.

GOLDEN SULPHURET A.

Pentasulphide of Antimony	21.900%
Trisulphide of Antimony	77.960%

GOLDEN SULPHURET B.

Pentasulphide of Antimony	43.000%
Trisulphide of Antimony	57.000%

GOLDEN SULPHURET C.

Pentasulphide of Antimony	57.825%
Trisulphide of Antimony	40.735%

GOLDEN SULPHURET D.

Pentasulphide of Antimony	23.291%
Trisulphide of Antimony	76.029%

Most of these products, owing to their high content of trisulphide, are only interesting as pigments; for, as vulcanizers, their reaction is very weak.

Such goods should be replaced by the types which contain lime sulphate as impurity, but in which all the antimony is in the form of pentasulphide as shown in the following analysis:

ANTIMONY SULPHIDE P No. 1.

Pentasulphide of Antimony	64.692%
Free Sulphur	13.420%
Lime Sulphate	9.852%
Oxide of Antimony	12.046%

ANTIMONY SULPHIDE P No. 2.

Pentasulphide of Antimony	56.998%
Free Sulphur	15.000%
Lime Sulphate	28.002%

ANTIMONY SULPHIDE P No. 3.

Pentasulphide of Antimony	68.099%
Free Sulphur	18.000%
Lime Sulphate	13.901%

These products are perfectly manufactured. They were obtained starting from Schlippe's crystallized salt, and are precipitated by sulphuric acid. Their only impurity is lime sulphate.

With pentasulphides, like those of series P, the reduction does not extend to black sulphide, but stops at red sulphide, yielding colloidal sulphur, and therefore permitting (1) a more rapid vulcanization; (2) a perfect red and not a brownish coloring.

TOTAL SULPHUR IN RUBBER.

Davies' method consists in treating a half gram of finely ground vulcanized rubber in a 300 cc. Erlenmeyer flask with 15 cc. of saturated solution of arsenic acid, 10 cc. of fuming nitric acid and 3 cc. of saturated bromine water. The mixture is covered and boiled till oxidation is complete and the solution clear. If needed, more nitric acid may be added. The solution is evaporated to syrupy consistency, a few crystals of potassium chlorate added, and evaporation continued nearly to complete dryness, to expel entirely the oxides of nitrogen. After cooling, take up in 50 cc. of 10 per cent hydrochloric acid, heating over a water bath until solution is complete. The insoluble matter is separated by filtration and the filtrate diluted to 300 cc. from which the sulphate is precipitated in the usual manner.

The action of the arsenic acid is to raise the boiling point of the solution and to produce oxidation. The reagent is prepared by addition of arsenious anhydride to water till its boiling point is raised to 284 degrees F.

COLOPHONY IN SHELLAC.

A. Hutin in "Le Caoutchouc & la Gutta-Percha" discusses the adulteration of shellac and describes his methods for qualitative and quantitative determination of colophony which is a common addition for cheapening shellac.

Qualitative Test.—A gram of finely powdered gum lac is saponified with a slight excess of caustic soda, diluted with water and slight excess of copper sulphate solution added. If colophony is present resinate of copper is formed which will give a green color to turpentine. Pure gum lac under these conditions gives no indication.

Quantitative Tests. (a) A gram of finely pulverized shellac is dissolved in 97 or 98 degree alcohol. Sand is added to form a mass and the whole evaporated to dryness on a water bath. The process of solution in alcohol, addition of sand and drying is performed three times to eliminate the gum lac, each time the mass being scraped from the dish. The gum lac and sand from these operations is extracted in a Soxhlet for four hours with chloroform. The colophony is dissolved, while the gum lac is not affected. (b) Add to one gram of finely powdered gum lac 50 cc. of 10 per cent borax solution. The gum lac will dissolve, but the colophony will not. Should the gum lac contain a phenol-formaldehyde condensation product as an adulterant, the latter would not dissolve in the

borax solution but would remain with the colophony present. Condensation products, as applied, would be insoluble in alcohol and acetone, in which they only swell. The colophony could be recognized in the alcoholic extract and determined. Before long gum lacs are likely to be adulterated by products similar to "Bakelite" when a method is found to produce an alcohol soluble form to meet the requirements of the consumer.

CHEMICAL PATENTS.

THE UNITED STATES.

SYNTHETIC CAOUTCHOUC. An improvement in the manufacture of synthetic caoutchouc from isoprene by polymerization, consisting in first polymerizing the isoprene and then adding to the polymerized product ethyl acetate in sufficient quantity to dissolve the caoutchouc-like substances which are not real caoutchouc and to precipitate the real caoutchouc. [Arthur Heinemann, West Kensington, London, England. United States patent No. 1,194,839.]

Liquid Coating Composition. A composition of matter consisting of Pontianak gum copal, 90 pounds; shellac, 10 pounds; alcohol, 14 gallons, and benzol, 6 gallons. [Alfred R. Picker, assignor to Durlacque Manufacturing Co.—both of St. Louis, Missouri. United States patent No. 1,196,276.]

Reclaiming Rubber. Waste rubber scrap is treated in a bath made of sulphuric acid and an excess of calcium chloride, at a temperature below that of vulcanization; subsequent treatment with a solution of caustic alkali at a temperature below that of vulcanization; removing the alkali and plasticizing in highly heated water. [Harry O. Chute, New York City. United States patent No. 1,196,334.]

OTHER CHEMICAL PATENTS.

CANADA.

169,371. Solution for inflating tires. Louis Letard, Rochefort-sur-Mere, Charante Inferieure, France.

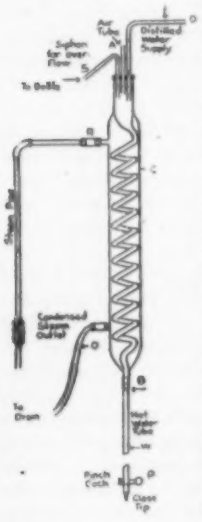
THE FRENCH REPUBLIC.

479,960 (October 8, 1915). Vulcanizable composition and method for its preparation. J. S. Campbell.

LABORATORY APPARATUS.

CONTINUOUS HOT WATER APPARATUS.

PROF. J. HOWARD ROOP, of Purdue University, describes in "The Chemist-Analyst" a novel apparatus for a continuous supply of hot distilled water for analytical work. The apparatus shown in the cut may be made by reversing the use of an ordinary worm condenser.

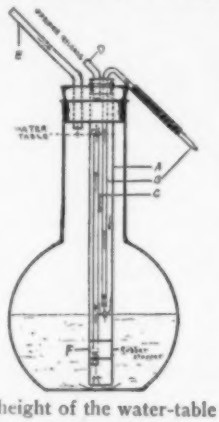


Connect the condenser *C*, and steam pipe by means of a piece of pressure tubing wired on at *R*. The outer jacket of the condenser forms a steam jacket for the worm bearing the distilled water. The top of the condenser is fitted with a three-hole rubber stopper and has running through it three glass tubes; *D* for the distilled water supply, *A* for air and *S* for a siphon.

The distilled water enters the worm tube through *D* and is drawn off at *B* by a length of rubber tubing; the flow being controlled by a pinch cock *P*. The tube at *A* allows air to enter and should extend a few inches above the siphon. The siphon carries off any extra water backing up in the worm, which can be caught in a bottle for distilled water. The outlet for the condensed steam escapes by the outlet *O* through a rubber tube to drain.

A NON-SPATTERING WASH BOTTLE.

To avoid spattering at the tip of the nozzle of the ordinary wash bottle, F. C. Clapp, of the Minnesota Agricultural Experiment Station, St. Paul, Minnesota, has utilized the principle of raising the water table of the wash bottle slightly above the level of the tip of the nozzle, thus avoiding "back action" by retaining the nozzle permanently full of water.



The diagram will make the principle clear. While the bottle is in use the thumb is held over the pressure release *D*, the water is forced up through the tube *C* till the water-table indicated has been reached, the water level being maintained by the stopper *F*. The nozzle works the same as though the wash bottle were full to the raised water level. Before releasing the pressure from the mouth piece the thumb is taken off the tube *D* so that the height of the water-table *A* maye be insured, and to prevent "back action" through *B*.

In construction the following details are important:

1. Make *D* 5 millimeters, or as large as possible, to afford a quick release of pressure, having it project only to the bottom of the small cork in *A*.

2. The size (4 millimeters) and length of *B* are not important except that the bottom projects an inch or so below the water-table.

3. The stopper *F* should be near the bottom of *A* for best results.

4. The tube *A* (12 millimeters) projects up through the stopper and to the bottom of the bottle.

5. The intake *C* should be 4 millimeters, or as small as possible, and still give sufficient flow. Its height determines the height of the water-table.

All dimensions given are outside measurements.

EXTENSION WEIGHING SCOOP.

A recent improvement is an aluminum weighing scoop, attachable by means of a bayonet joint to an extension. Samples can be weighed and introduced into flasks and narrow openings without transferring or getting any of the material on the sides of the flask or other receptacle. There are frequent occasions where the use of this little instrument is very desirable, as it not nly prevents any loss of materials by placing the weighed sample precisely where wanted, but in this way obviates excessive use of reagent to wash adhering substance from the neck of narrow vessels. It is a great convenience in many determinations. [Scientific Materials Co., Pittsburgh, Pennsylvania.]

HYDROGEN SULPHIDE CONTAINER.

Ernst Richter has devised a container for hydrogen sulphide in the absence of a hood. It is described in "Chemical Abstracts" as follows: It is recommended that hydrogen sulphide water be filled into a small black-lacquered separatory funnel, the delivery tube (3cm. in length) of which is supplied with a perforated cork, so that the apparatus when not in use is closed by fitting a test tube on the cork. When it is desired to apply the reagent, the test tube is replaced by another containing the material to be tested.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

New Machines and Appliances.

RUBBER SHOE PATTERN ROOM.

MANY problems relating to style, fit, construction and economy of stock are involved in designing and making ready for the manufacture of a line of rubber boots or shoes. These problems come for solution to the pattern room. Such a room is shown in the illustration of the pattern department of the La Crosse Rubber Mills Co., La Crosse, Wisconsin. In addition to solving questions of design and construction, the pattern room furnishes the many sheet metal patterns needed by the factory in the manufacture of goods. These patterns are standardized and graded accurately to size and shape corresponding to the parts they represent in the shoe. The number of such patterns necessary in a factory is very large and subject to constant change and renewal.

Several features of pattern room work are clearly shown in the picture. On the drawing board in the foreground the pattern maker lays out a complete set of patterns for a middle size shoe, and cuts them from heavy paper. These serve as original

PATTERN ROOM IN A RUBBER SHOE FACTORY.

standards, and by means of a size-grading machine, seen in the background, they are reproduced in proper gradations for every size of shoe desired.

The graded sets of paper patterns are next transferred to sheet metal for use by the rubber cutters. This is accomplished by outlining the paper pattern on stout sheet tin and, by means of heavy, hand-operated bench shears, cutting the tin to the outline, as the operator in the foreground is doing. Careful size marking and filing is necessary to render the standard paper patterns always accessible, and provision for this may be seen in the various tools and furniture shown in the cut.

SOME GARVIN HARD RUBBER LATHES.

In the manufacture of fountain pen barrels and caps, pen and pencil holders, syringe and atomizer parts, electrical switch handles and many other hard rubber products, speed and turret lathes are important. In the illustration, Fig. 1, are shown two views of a 10-inch speed lathe commonly used in hard rubber mills for turning, threading and chasing. The bench lathe is shown in the first view with the combination cutting hob and leader that operates the chasing bar. In the second view the same machine is shown with floor legs and the chasing bar attachment removed. The lathe has hardened and ground spindles, running in conical-shaped solid bronze boxes and is provided with a tight and loose pulley in the spindle. It is driven from a countershaft placed at the back of the lathe and connected to the main line.

The No. 2 screw cutting lathe, shown in Fig. 2, has a plain turret-head, automatic collet, a bar feed, and is very similar to

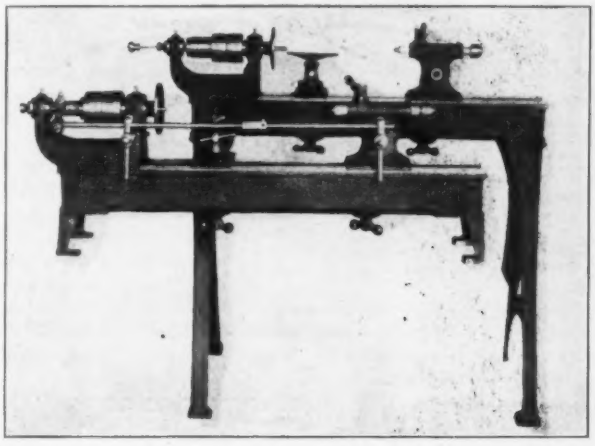


FIG. 1.—HARD RUBBER SPEED LATHE.

the No. 1 lathe, but is larger and capable of handling hard rubber rods up to 1 inch in diameter. It has tight and loose pulleys in the head instead of a cone pulley and the belt shifter is directly underneath the pulleys. The counter shaft is placed on a bench directly back of the machine which is driven by straight and cross belts.

Another interesting hard rubber turret lathe is furnished with short bench legs or floor legs as desired. This tool is designed to handle a greater variety and quantity of work than the lathes previously described. It has a power feed and an auto-

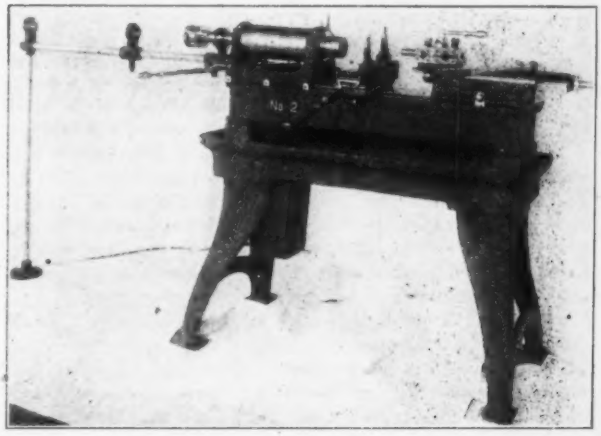


FIG. 2.—NO. 2 HARD RUBBER LATHE.

matic turret, automatic collet and bar feed for handling rubber rods up to 1⅛ inches in diameter. The slide rest, besides having the hand lever operated cross motion, is provided with a sidewise swiveling movement. [The Garvin Machine Co., New York City.]

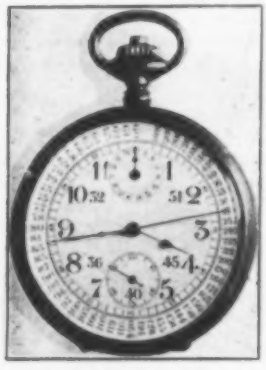
A CONVENIENT CEMENT CAN.

Receptacles and cans that are intended to hold inflammable mixtures should be designed with the idea of reducing the fire hazard to a minimum. Experience has proven that they must be made in such a way that their contents in case of fire will burn off slowly, confining the fire to the immediate vicinity instead of exploding and scattering the fire over a large area.

The illustration shows a cement can designed for a supply room and one which can easily be transferred to and from the cement house. It is constructed of heavy galvanized sheet metal with slanting bottom and a tight-fitting cover that prevents evaporation and acts as a safety valve in case of fire. The quick closing gate valve saves time and reduces waste. The can is made in two sizes, holding approximately 5 and 10 gallons, respectively. [United Awl & Needle Co., West Medway, Massachusetts.]

THE MASTER CHRONOGRAPH.

Two of the principal causes that result in loss of profits to the rubber industry are loss of time and unnecessary motion. Careful investigation would doubtless bring to light in many plants the presence of leaks that are directly responsible for the failure to make goods at a profit.



The master chronograph is a specialized watch that is used as an aid in studying mechanical operations. The chronographic feature operates in seconds and fifths of seconds. The figures on the extreme outside of the dial are spaced one second apart and represent at any point of elapsed time exactly what the corresponding output or production per hour is, when the operation is of one minute's duration or less. The figures on the extreme inside of the dial, such as 51, 45, 40, etc., represent operations per hour, when an operation goes past one minute and into the second minute. Between these figures one can easily scale the result. For instance: If it requires 29 seconds to perform one operation, as shown by the stopping of the large hand, the reading 124 directly under it is the corresponding output per hour.

If the hand is stopped over 19 seconds the reading directly under it shows the output to be 190 per hour.

Let us assume that the operation is of longer duration than one minute, that the large hand made one entire revolution and went on to ten seconds beyond, or one minute and ten seconds. The reading in that case would be 51 operations per hour, inasmuch as all figures for the second minute are placed on the extreme inside of the dial.

In the case of very short operations it is usually good practice to time ten operations and add a cipher to the amount shown on the computed dial.

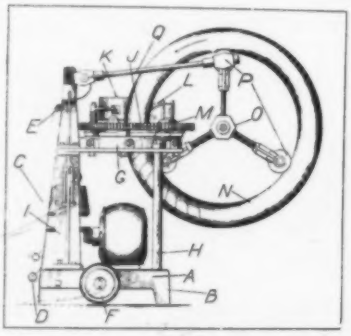
Let us assume that it is desired to ascertain the number of strokes per hour of a press or the production of an automatic machine, and while we count ten strokes or pieces, as the case may be, the hand reaches 19 seconds. Reading directly under it and adding one cipher, we have 1,900 as the number per hour.

For motion study and lost motion determination, rate standardization, general cost data and all other short time operations, this device is obviously useful. [Mortimer J. Silberberg, Chicago, Illinois.]

MACHINERY PATENTS.

PORTABLE RAG WRAPPING MACHINE.

THIS machine, designed for wrapped tread tires, provides a spider of novel form on which the tire remains from the time it is taken out of the mold, after the first cure, until the completion of the wrapping process and its removal for the final cure. Moreover, the machine is portable and self-contained, so that it may be brought into action successively upon tires supported on different spiders.



In the drawing, *A* designates the base of the machine, the back of which rests upon legs *B*, while at its forward edge a pair of bars *C* are pivoted at *D*, the upper ends being connected by a handle *E*. When this is swung downwards the ends of the bars are raised from the floor, and the machine is free to be moved about on rollers *F*.

The table *G*, supported by rods *H* and standards *I*, has a central opening above which is mounted on anti-friction rollers the annular gear *J*, provided with a hinged segment that admits the tire to the opening in the table. This annular gear is driven from the vertical shaft that is journaled in the frame and driven by the electric motor mounted on the base plate.

The fabric spool *K*, mounted on the annular gear, contains the wrapping strip *L*, that passes around the tension guide *M* to the tire *N*.

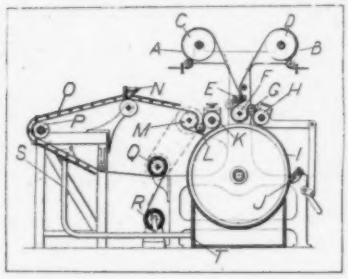
While the tire is being built up, the spider *O* acts as a core chuck, but in the wrapping operation it assists in rotating the core. The spider has three arms supporting the screws that adjust the three rollers *P* to the inner circumference of the tire by miter gearing located in the hub. Each roller is bushed and key-wayed to fit the short, splined stub of the portable jack shaft *Q* that is driven from the vertical shaft and rotates the tire.

In operation the hinged segment *K* is raised and the machine swung in position so that the tire enters the gap when the segment is closed. Then the jack shaft *Q* that transmits power from the vertical shaft to any one of the rollers *P* is connected up, and the machine placed in motion, whereby the tire is slowly revolved by the pulley *P*, and the strip of fabric *L* is spirally wrapped around the tire by the revolution of the horizontal gear *J*. [William C. Stevens, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio. United States patent No. 1,194,565.]

MACHINE FOR MAKING AND COATING WEFTLESS FABRICS.

The method consists in using two parallel warps of threads of indefinite length, each warp having the width of the finished fabric, but each having a number of threads equal to half the

total number of threads in the finished fabric. The threads of each warp are inserted between threads of the other warps, and are all finally united by the rubberizing process hereafter described. Referring to the drawing, which is a side elevation of the machine, the two half warps *A* and *B*, after passing through vertical combs, which align the threads to the required width, are guided over drying drums *C* and *D*, then downward through the vertical comb *E*, which unites the two half warps in a single layer.

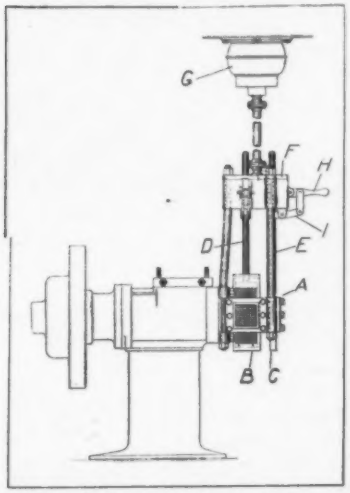


After passing around the roller *F* and between rollers *G* and *H*, where it is impregnated with rubber solution, the fabric is guided over the heated drum *I*, and the spreading device *J* applies a coating of rubber to the front surface. It then passes around the drum, over the water cooled roller *K*, and between rollers *L* and *M* to the spreader *N*, which rubberizes the back surface of the fabric.

The fabric, which is now coated on both sides, passes under the steam-heated hood *O*, and around the guide roller *P* to the wind up roller *Q*, the liner being supplied from roller *R*. The solvent vapors are drawn through pipe *S* by a suction pump to the chamber *T*, into which are also drawn vapors from the drum *I*. [Eugene Bourdin, Lyons, France. United States patent No. 1,195,554.]

MECHANICALLY OPERATED STRAINER HEAD.

To avoid difficulty and loss of time attendant in changing the strainers of rubber reclaiming machines when they become clogged, is the object of this invention. The accompanying drawing is a side elevation of a tubing machine showing one of the three mechanically operated strainers and the operating motor attached overhead.



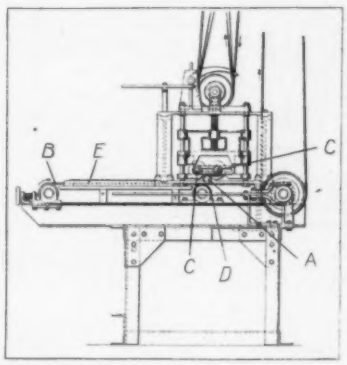
The strainer head *A* discharges in three directions longitudinally and laterally, and is bolted to the tubing machine head, forming a continuation of the stock discharge passage. It is chambered for steam and provided with guideways in which the three strainers slide vertically. One of the side strainer heads is shown at *B*, and *C* is a side elevation of the front head. These are raised and lowered by screws, one being shown at *D*, that are turned by three splined gears located in the casing *F* and driven by a pinion and vertical shaft connected to the motor *G*. The individual movement of the screws is controlled by three levers, one of which is shown at *H*, each lever being provided with a pivoted link *I*, that automatically stops the movement of the strainers beyond a prescribed point.

The strainers are rectangular perforated plates in two sections that are removably held in the strainer frame, their perforations registering with those of the frame plate and a wire mesh of finer gage, in two sections, interposed between. Thus the fine wire strainer is protected from injury by the larger particles of metal and other solids in the rubber and holds back the finer particles and shreds of fabric. When the strainers become clogged they are raised or lowered, as the case may be, until one of the sections clears the head and the other is opposite the outlet, then the clogged section and wire sheet are removed for cleaning without interrupting the operation of the machine. [Frederic B. Garrahan, Paterson, New Jersey. United States Patent No. 1,195,576.]

INNER TUBE ROLLING MACHINE.

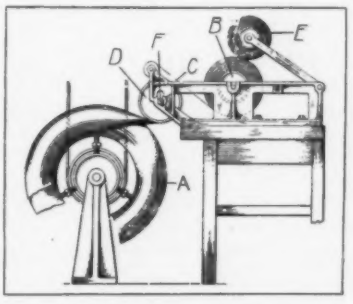
Generally speaking, inner tubes are made by hand, and therefore the following illustrated description of a new mechanical device for doing this work is of interest.

Referring to the drawing, which is a side elevation of the machine, the operation is briefly as follows: The pole *A* is placed on the endless belt carrier *B*, and the four narrow rollers, two of which are shown at *C*, *C*, are brought down in contact with the ends of the pole and supported by the idler roller *D*, located under the belt. The sheet of rubber stock is now laid on the platen *E*, which rests upon and moves with the belt carrier. The upper edge of the sheet is then solutioned, the carrier belt placed in motion, and the platen and the superposed sheet of stock are carried into the machine to a point where the edge of the sheet becomes attached to the revolving pole upon which it is rolled up, the platen being checked in a position which imparts a slight tension to the sheet and delivers it smoothly and evenly to the pole. [Frank Fenton, assignor to the Miller Rubber Co.—both of Akron, Ohio. United States patent No. 1,197,192.]



TIRE BUILDING MACHINE WITH FABRIC STRETCHING DISKS.

The object of this invention in tire building machines is to apply a positive and predetermined stretch only to such points in the fabric strip where stretch is necessary to make the fabric conform to the shape of the core. Thus, longitudinal stretch in the margins of the fabric strip is eliminated, puckering obviated and the stitching operation reduced to a superficial rubbing.

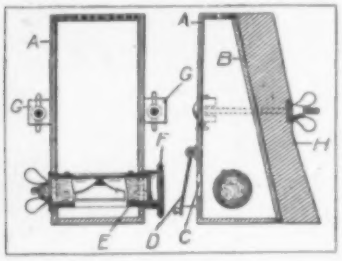


The drawing is a side elevation of the machine showing a tire core *A* mounted and driven in the usual way. On the table will be seen the stock roll *B*, from which the frictioned fabric strips *C* are passed around an idler roller and then down and around the stretching drum *D* to the core, the liner being wound up on the roller *E*.

The stretching drum is made up of 11 disks of equal diameter, comprising annular rings and graduated friction surfaces, assembled side by side on the stationary shaft *F*. Each friction disk revolves on the shaft at a surface speed relative to the speed of a corresponding portion of the core. A pronounced drag is thereby produced on the middle of the fabric, the edges being free to travel unhindered and the intervening portions are retarded to a degree corresponding to the drag produced by the friction disks over which that part of the fabric passes. Thus the fabric is built up on the core in a smooth and uniform manner. [George F. Fisher, assignor to the Hartford Rubber Works, Hartford, Connecticut. United States patent No. 1,195,800.]

A FRENCH PORTABLE REPAIR VULCANIZER.

This device comprises a casing *A*, which is trapezoidal in section, and made of aluminum or other metal. This casing is closed by a cover *B*, and constitutes the heating element for vulcanizing.



The cover can be flat, as shown in the drawing, or an arched or convex cover may be used.

The opening *C* is closed by a movable plate *D*, which is hinged to the casing and admits air to aid combustion. At the top of the casing there is a set of holes through which the products of combustion are exhausted.

The heater is made up of a hollow brass cylinder *E*, closed at one end, while the open end is closed by another cylinder of the same metal fitting over it. The cylinder is provided with a rectangular opening on its side, which is covered by a metallic screen, and, corresponding with this opening, there is a heart-shaped opening in the outer cylinder, constituting an aperture that is adjustable both lengthwise and transversely. This opening is the burner of the heater, and is also used for pouring the fuel into the heater. Inside of the cylinder there is a braid of asbestos or some other absorbent material. By turning the knob *F*, the length of the aperture and the width of the flame are regulated, thereby controlling the temperature of the vulcanizer.

The side of the casing is provided with two lugs *G* through which are passed two bolts that, in connection with iron washers and thumb screws, are used in clamping the object to be vulcanized between the wooden blocks *H* and the heating element. The temperature of the apparatus is measured by a thermometer that is not shown in the drawing. [Gauttieri and Cavaletti. French patent No. 480,124 (1915).]

OTHER MACHINERY PATENTS.

THE UNITED STATES.

1,194,967. Pneumatic tire building apparatus. P. DeMattia and B. DeMattia, Clifton, N. J.

1,194,968. Pneumatic tire building core. P. DeMattia and B. DeMattia, Clifton, N. J.

1,195,204. Trimming rubber articles. F. J. Gleason, Walpole, assignor to Standard Woven Fabric Co., Framingham—both in Massachusetts.

1,195,332. Conveyor for cores. L. J. Bognar, Akron, Ohio.

1,195,337. Tire repair vulcanizing attachment for automobiles. R. Cannon and S. Gray, Paisley, Oreg.

1,195,412. Mold for making hollow rubber articles. E. L. Stimson, assignor to the Mechanical Rubber Co.—both of Cleveland, Ohio.

1,195,414. Apparatus for treating tubular fabric. L. A. Subers, Cleveland, Ohio.

1,195,480. Separable core for making pneumatic tire casings. J. C. Lauritzen, Akron, Ohio.

1,195,592. Manufacture of wheel rims. F. J. Keegan, assignor to the Dunlop Rubber Co., Limited—both of Coventry, England.

1,196,023. Shuttle for wrapping machine. F. M. Pierce and W. B. Pierce, assignors to Pierce Wrapping Machine Co.—all of Chicago, Ill.

1,196,044. Paper-wrapping machine. W. C. Stevens, Akron, Ohio, assignor to Pierce Wrapping Machine Co., Chicago, Ill.

1,196,109. Coated fabric vulcanizing machine. F. J. Healy and S. R. Sheppard, Southall, England.

1,196,249. Tire-unwrapping machine. J. Kosutz and J. Bunta, Akron, Ohio.

1,196,513. Collapsible core for tire casings. W. F. Brunswick, Akron, Ohio.

1,196,648. Apparatus for making rubber tubes. A. Bleecker, Akron, Ohio.

1,197,253. Mold for forming treads on pneumatic tires. P. A. Biddinger, assignor of one-half to A. Kallmerten—both of Mansfield, Ohio.

1,197,326. Apparatus for coating strips of tin or the like with rubber or other plastic material. E. F. Ackerman, assignor to The Okonite Co.—both of Passaic, N. J.

1,197,484. Tire repair vulcanizer. O. A. Hayner and H. L. Hayner, Mason, Mich.

1,197,521. Collapsible core. F. D. Mason, Akron, Ohio.

1,197,522. Bead-trimmer. F. D. Mason, assignor to The Bridgewater Machine Co.—both of Akron, Ohio.

1,197,702. Quick opening head for horizontal vulcanizers. H. L. Williams, assignor to The Williams Foundry & Machine Co.—both of Akron, Ohio.

1,197,758. Tire mounting and demounting tool. J. J. O'Brien, St. Louis, Mo.

THE DOMINION OF CANADA.

*169,440. Bead cleaner. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of T. Midgley, Lancaster, Ohio.

*169,441. Bead trimmer. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of T. Midgley, Lancaster, Ohio.

*169,455. Bias cutter. The Firestone Tire & Rubber Co., assignee of W. C. Stevens—both of Akron, Ohio.

169,935. Tire building tool. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, Canada, assignee of W. Kaufmann, New York City.

*169,958. Tire building machine. The Miller Rubber Co., assignee of F. F. Brucher—both of Akron, Ohio.

*169,959. Tire building tool. Morgan & Wright, assignees of W. Kearns—both of Detroit, Mich.

*170,161. Repair vulcanizer. D. P. Einrem, Springfield, S. Dak.

*170,214. Laminated cohesive interwound fabric machine. L. A. Subers, Cleveland, Ohio.

*170,215. Fabric and hose making machine. L. A. Subers, Cleveland, Ohio.

*170,216. Laminated cohesive interwound fabric band machine. L. A. Subers, Cleveland, Ohio.

UNITED KINGDOM.

In order to give the public the advantage of having abridgments of specifications up to date while retaining their numerical sequence, applications for patents made subsequent to 1915 are given new numbers when their complete specifications are accepted, or become open to public inspection before acceptance. The new numbers start with No. 100,001 (without any indication of date), and supersede the original application numbers in all proceedings after acceptance of the complete specifications.

*5,931 (1915). Pneumatic tire building machine. Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio.

*5,932 (1915). Pneumatic tire building machine. Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio.

6,413 (1915). Apparatus for molding and vulcanizing tire covers. Dunlop Rubber Co., 14 Regent street, Westminster, and C. MacBeth, Manor Mills, Salford street, Aston, Birmingham.

7,168 (1915). Machine for treating coagulated rubber. S. C. Davidson, Sirocco Engineering Works, Belfast.

*100,731. Mold for rubber heels. J. G. Tufford, 1217 East avenue, Elyria, Ohio.

*100,828. Tire building fabric stretching machine. W. J. Mellersh-Jackson, 28 Southampton Building, London. (Hartford Rubber Works, Hartford, Conn.)

THE FRENCH REPUBLIC.

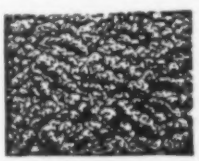
479,876 (September 29, 1915). Apparatus for distributing liquid under pressure applicable to the manufacture of rubber footwear. Boston Rubber Shoe Co.

*Denotes Patents for American Inventions.

PROCESS PATENTS.

MAKING CRINKLED RUBBER.

THE surface of crude rubber, when taken from the mill before being completely broken down, presents a wrinkled or puckered appearance, as will be seen in the accompanying illustration. After washing and drying, the ingredients are added and the stock milled carefully to permit breaking down. The crinkled sheet is then removed from the mill and cut into the required pattern for articles such as bathing slippers, wash cloths, handles for bicycles, etc.



After having received its final form the article is cured,

preferably by the cold process, to obviate the possibility of the stock softening and thereby losing its characteristic surface appearance. It is therefore better to effect the cure by dipping for a short time in a weak solution of sulphur monochloride. [Goodyear's Metallic Rubber Shoe Co., Naugatuck, Connecticut. British patent No. 100,727.]

METHOD AND APPARATUS FOR RECLAIMING. Rubber scrap of different densities is reduced to a pulp in water which is mixed with a heavy oil, and air is admitted to the bottom of the tank causing the particles of low specific gravity to rise to the surface with the oil, while the heavy particles settle. The film on the surface containing the lighter rubber is skimmed off by a slowly moving endless conveyor, while the heavier particles which settle are removed by the same means. [Thomas J. Pennington, Chicago, Illinois. United States patent No. 1,195,264.]

OTHER PROCESS PATENTS.

THE UNITED STATES.

1,195,118. Process of making hard rubber articles. H. Weida, Highland Park, N. J., assignor to The India Rubber Co., a corporation of New Jersey.

1,197,396. Process of treating textile materials. R. B. Price, assignor to Rubber Regenerating Co.—both of Mishawaka, Ind.

1,197,912. Method of manufacturing footwear. Le B. C. Colt, assignor to National India Rubber Co.—both of Bristol, R. I.

THE DOMINION OF CANADA.

169,566. Rubber and hair vulcanized together. C. Pacchetti, Milan, Italy.

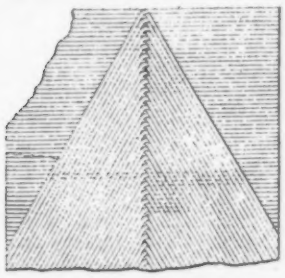
THE FRENCH REPUBLIC.

479,826 (September 24, 1915). Improvements in the manufacture of rubber footwear. Boston Rubber Shoe Co.

MISCELLANEOUS PATENTS.

CORD TIRE FABRIC.

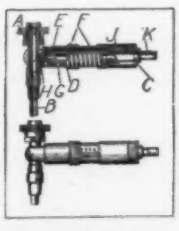
A CORD fabric tube is built with two layers of rubberized cord, the inner layer laid at right angles to the axis of the tube, and the superposed layer comprising cords extending from the tread line diagonally half way around the tube, and then diagonally back to the tread line. [John F. Ives, Cleveland, Ohio. United States patent No. 1,194,388.]



A similar patent granted to the same inventor covers a two-ply fabric strip composed of two layers of rubberized cords, the inner layer extending at right angles to the edges, and the superposed layer extending diagonally from the center to the opposite edges of the strip. [John F. Ives, Cleveland, Ohio. United States patent No. 1,194,389.]

SAFETY PRESSURE GAGE.

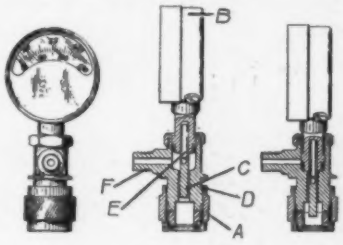
The inventor of this device has combined an air pump connection with a pressure gage that may be set to the required tire pressure, and when this point is reached the excess air escapes with a whistling sound. In the drawing, the upper is a sectional view and the lower one a side elevation of this device.



The gage being connected to the tire valve stem at *A*, the tube *B* is attached to the air supply, and the barrel *C* adjusted to the desired pressure on the scale shown in the lower figure. When this pressure is reached the air acts on the piston, comprising a tubular member *D* and an annular member *E*, forcing back the spring *F*, and causing the valve *G* to move away from the valve *H*. This allows the air to escape between them, and to flow through the opening *I* and the sleeve *J*, causing the whistle *K* to indicate that the desired pressure has been reached. [Frederick A. Schroeder, assignor to the Hill Pump Valve Co.—both of Chicago, Illinois. United States patent No. 1,196,142.]

TIRE PRESSURE INDICATOR.

In the accompanying illustration, the drawing on the left is a front elevation of this device, showing the valve and pressure indicating dial. Referring to the central drawing, the end of the tire valve is attached at *A*, and the gage part *B* is forced down by hand to the position shown in the drawing on the right. Thus the stem *C* will unseat the pin in the valve, and air from the tire will pass upward around the stem, through the opening *E* and into the gage,



which will indicate the tire pressure on the dial. If additional air is required the manual pressure is removed from the dial and the air pressure raises the gage to the position shown in the central figure. Then air from the source of supply freely passes through the opening *F* into the central opening, and thence through the valve into the tire, the pressure being sufficient to unseat the valve. [James W. Frazier and Fred E. Hansen, Cleveland, Ohio. United States patent No. 1,196,226.]

GOLF BALL. This patent provides an inner rubber bag or container filled with liquids of different specific gravities, one of which is mercury. [William R. Knight, Belleville, assignor to St. Mungo Manufacturing Co., Newark—both in New Jersey. United States patent No. 1,194,751.] A similar patent granted to the same inventor was illustrated in THE INDIA RUBBER WORLD, September 1, 1916, page 662.

LEAK ALARM. A rubber bulb is made integral with the inside of the inner tube and provided with a whistle which gives an effective alarm when the tube becomes deflated to a predetermined extent. [George W. Wells, assignor to Walker-Wells Co.—both of Amesbury, Massachusetts. United States patent No. 1,195,883.]

THE UNITED KINGDOM.

RUBBER COVERED ROLLERS. Rollers of the cushion type with a metal core around which rubber tubing under fluid pressure is spirally wound and an outer sleeve applied and vulcanized, have been covered in British patent No. 2,606, 1915, by the inventor of the following patent. The present invention relates to means for preventing the spiral tubing from creeping endwise. [Jabez Muskett Pendleton, Manchester, England. British patent No. 15,001 (1915).]

HARD RUBBER STORAGE BATTERY SEPARATOR. A thin hard rubber separator is molded with longitudinal ribs on the sides between which are additional ribs formed on one or both sides of the separator, tapered, thickened portions being provided at the ends to obviate longitudinal breaks, and it is then finished by punching perforations in the thin portions. [The India Rubber Co., New York City. British patent No. 100,994.]

COATING PNEUMATIC TIRES. This device provides a circulation of air within the inner tube and through an outside tube so that the air within the tire will remain cool during travel. This is obtained by attaching an annular tube to the spokes of the wheel and connecting it to the inner tube of the tire, the air circulating freely between both tubes. [P. J. Cuddihy, Rutherford, New Jersey. British patent No. 100,897.]

New Goods and Specialties.

RED RUBBER DOLLS.

FOR years the toy buyers of America have looked to the German factories for amusement devices of all kinds. The war has stopped this trade and for the holidays this year practically all toys will be of American make.

Among the novelties for the coming season are the clever Dutch dolls shown here.

These rubber toys are claimed to be the only red rubber toys made in America. Being made from solid red stock they will not peel as do some veneered rubber toys. For this reason they are absolutely safe for children and may be put in the mouth and played with without chance of harm.

These dolls are made as boy and girl. The designs are live and attractive, the little figures standing sturdily on their feet, the base being substantial enough to form a good pedestal. [Davol Rubber Co., Providence, Rhode Island.]

RUBBER-INCASED DESK CLOCK.

In many factories the constant vibration of the machinery is communicated so strongly to the floors and furniture as to interfere with the accurate running of clocks. Sometimes the presence of electricity acts as a similar preventative. To overcome this the "Nojar" desk clock shown here has been perfected. The works are of a first class make of such clocks, but instead of a wood or metal case is one of heavy rubber, which insulates the works from electricity, and cushions them from the vibrations. The design is chaste, and the clock is an appropriate fixture for workshop or office and is also a convenient timepiece for a traveler, as it can be carried in the bag or suitcase, without special packing. [Pennsylvania Rubber Co., Jeannette, Pennsylvania.]

TOOTH-BRUSH ATTACHMENT.

The recently patented tooth-brush attachment shown herewith consists of a small piece of rubber made to slip up over the handle, around the back, and up above the sides of the brush,

having a bead of about one-eighth of an inch approximately flush with the ends of the bristles. Its purposes are to massage the gums while the teeth are being brushed, to hold the water and powder within the bristles, and to prevent the back and sides of the hard portion of the brush from injuring the gums. If it is desired to carry the tooth-brush in the pocket or in a traveling bag, the bristles may be turned around so that the rubber attachment acts as a protective covering. [Theodore R. Plank, Los Angeles, California.]

"RINEX" SOLES.

With the cost of sole leather reaching unparalleled heights, the demand for a substitute has been far reaching and imperative. One of the new comers in this field is the "Rinex" sole, which is claimed to have all the good qualities of leather soles and rubber

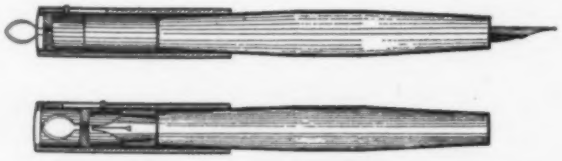
soles, with none of the objections of either. This sole is recommended for lightness, toughness, flexibility, comfort, and wearing qualities. It is composed largely of rubber, with other materials, which add to its efficacy. It is made in the various shapes and thicknesses required by the shoe manufacturer, and in black, white and tan colors. [The United States Rubber Co., New York City.]

DECORATED TOY BALLS.

Rubber balls as toys for children come in more and more attractive guise, to delight the eyes and hold the attention of their youthful owners. The inflated rubber balls here shown are coated in assorted solid colors with a "New Process Finish," which affords a bright glazed surface claimed not to check nor crack. Imprinted on both sides, in the same color or in a different color for each side, are various decorations, illustrating nursery rhymes, circus animals, baseball figures, etc. These balls are furnished in three diameters: 2⅜, 2½ and 3½ inches. [The Faultless Rubber Co., Ashland, Ohio.]

STEEL ERASER FOR FOUNTAIN PEN.

A small steel knife or eraser attachment housed within the rubber cap of a fountain pen affords a handy device for scratching out ink marks from penned or typewritten records. It is also applicable to ink pencils, lead pencils, etc. To accommodate this attachment, no change is necessary in some fountain pen models



and but slight lengthening in others. A tubular plunger carrying the blade or knife is inserted in the cap, the movement of

this plunger to bring the knife out through a slot in the end of the cap, and back inside, being effected through a small pin projecting from a bayonet slot in the side of the cap. [W. E. Meadwell, Ithaca, New York.]

CUSHION RUBBER-SOLED CANVAS SHOE.

In this high-tensioned age the majority realize the importance of reducing or eliminating shocks to the nervous system, and a shoe sole that prevents shock in walking would rightly be considered a benefaction. In the "Aviator" sport and tennis shoe, here shown, a resilient cushion, comprising a filler of aerated or sponge rubber between the inner and outer soles of the shoe, serves as a shock absorber and heat insulator. The illustration shows a shoe cut through the center longitudinally, revealing the air-spaced rubber filler, which, it will be seen, is doubly thick at the heel, where the need of a shock absorber is greatest. This gives also an added springiness to the step, a real aid to pedestrianism, while for protracted gymnasium work on hardwood floors, "Aviator" shoes are said to produce less than half the fatigue ordinarily felt when wearing the usual sporting shoes. [Canadian Consolidated Rubber Co., Limited, Montreal, Canada.]

A FLEXIBLE COUPLING AND UNIVERSAL JOINT.

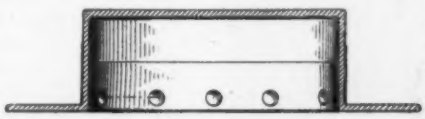
The old type of universal joint, while generally positive and effective, has its objectionable features. To overcome these and give one of uniform strength in every direction, and between all points, and to reduce shocks and give more elasticity, the Thermoid-Hardy Fabric Flexible Coupling has been evolved. The main features of this invention are two three-armed spiders, attached on opposite sides of a flexible disk, at alternate points. These disks are composed of frictioned Sea Island cotton fabric, three thicknesses of which are built up to form the cushion. These are attached to the spiders by bolts and nuts, washers being provided to prevent tearing during adjustment. The strength of the superposed layers, their threads at different angles, combined with their flexibility, makes a coupling which is economical to assemble, eliminates back-lash, requires no lubrication, is not affected by water nor oil, prevents the transmission of shocks and sounds, and is frictionless. It has been adopted, or is being tested, by many prominent engineers and factories in this country and abroad. [Thermoid Rubber Co., Trenton, New Jersey.]

RUBBER-COATED ADHESIVE PLASTER.

Rubber in a plaster for surgical uses adds to its adhesiveness. A rubber-coated zinc oxide plaster which sticks and stays stuck, and which, besides its surgical use, can be used for repairing articles of glass, china, cloth, wood, rubber tires, hose, etc., is now put up in various widths and lengths, in attractive metal boxes. [Bauer & Black, Chicago, Illinois.]

HAT "SWEAT" BAND WITH RUBBER DISKS.

For purposes of ventilation it is necessary that some means be provided so that the inner band of a man's hat, known as the "sweat band," will not come in too close contact with the head. Some sweat bands contain projections which form corrugations, unpleasant in sensation and exerting injurious pressure on the head of the wearer. Also, they do not materially assist in maintaining the hat on the head.



In the improved method here shown, thin rubber disks, or buttons, are fitted into holes about the size of a 10-cent piece made in the leather band. These rubber buttons when inserted form a perfectly smooth surface, but each button has a flange which keeps it from coming through the band and a humped back which throws it forward when the hat comes in contact with the head. As it permits a comfortable, natural position of the hat and free passage of blood through the scalp, the headaches so apt to be produced by ill-fitting hats are avoided, and it is claimed also to prevent baldness. [Robert H. Holmes, New York City.]

GOODRICH RUBBER BLANKET AND APRON.

Many a good suit has been ruined when a motor ride is interrupted by accident or injury to the mechanism underneath the car, rendering necessary the "get out and get under" process celebrated in song, to discover and remedy the trouble. A rubber blanket which, unlike many others, is not at all cumbersome, but can be folded into a small, compact package and carried easily under the car seat or in the tool box, is a suit saver, and perchance a life saver, if the ground be of a moist variety. This is also an excellent camping blanket, and, in fact, its uses are manifold and its disadvantages *nil*.

The rubber apron for garage workers, also illustrated, completely envelops the wearer from neck to heels, thus affording the thorough protection particularly desired when washing the cars. For the uncleanly operations of vulcanizing tires, repairing automobile parts, etc., this ample covering is also highly useful, and it is claimed to be made of an excellent grade of rubber. [The B. F. Goodrich Co., Akron, Ohio.]

STYLES IN WATERPROOF GARMENTS.

The three silk and rubber wraps here illustrated show the transition from summer to winter styles. The fabric used for the first two garments, appropriately named after the water nymph "Undine," is the result of a newly patented Scotch process, the material being specially dyed, treated and rubberized. The color combinations and patterns furnished in the "Undine" fabric are exceptionally handsome—plain colors in all the newest sport shades, as well as plaids, checks and stripes, the material being double-faced or satin-faced, as desired for the individual garment.

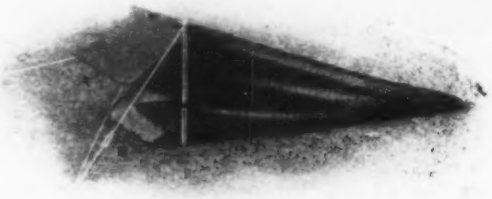
The cape shown is in a wonderful shade of rose pink, the box-plaited collar, and the edging on the shoulder cape and around the lower edge, lending the softening, becoming touch sought by feminine buyers.

As the days grow cooler and autumn winds begin to blow, a closer fitting wrap is more in demand, and the coat, hat and bag shown in the lower illustration form a most attractive fall outfit for walking or automobiling. [Lewis & Bettinson, New York City.]

A stunning model imported by the "Dry Goods Economist," also shown, may be suitably worn when the snow flies. The coat and hat are of blue rubber, trimmed with rows of stitching and seal fur.

THE "SILVERTOWN" VALISE-TENT.

The illustration shows a rubber-proofed outfit of decided utility, intended primarily for the use of officers in active service. It is thoroughly practical and designed not only to keep out rain, but to be impermeable even when resting in a pool of water. The material is rubber-proofed on the outside, so there is no absorption of water and consequent increase in weight. The valise weighs only 14 pounds, has no loose parts to get misplaced or lost, and is an exceptionally portable contrivance. It has a piece of strong canvas underneath, which forms the covering for the valise when packed, and straps which are attached to the canvas, eyelet holes being provided along the two sides for interlacing, if desired.



In two or three minutes it can be made into a comfortable tent, or it can be used as an ordinary ground sheet. The illustration shows the valise erected as a tent. The flap marked *A* is a continuation of the top and sides and, when extended, shields the opening from driving rain. The flap marked *B* is a continuation of the bottom and sides and can be raised so that no water can possibly enter through the opening. Inside may be seen the roomy pocket in which the kit may be placed and used as a pillow. The dimensions of the tent, when erected, not including extension flaps, are as follows: Length, 6 feet 6 inches; width, 2 feet 3 inches; height, at top end, 2 feet 3 inches. [The India Rubber, Gutta Percha & Telegraph Works Co., Limited, Silvertown, London, England.]

THE NEW "CRAVENETTE FINISH."

The Cravenette Co. of New York has recently entered the field of broad silks and silk mixed fabrics of every description, with an entirely new finish. It is called "Cravenette Finish" and imparts permanent water-resistant and spot-proof properties to the fiber of the silk, so that a garment is insured against the damaging effects of water.

The feature most interesting to the rubber trade is the application of this finish to the goods after they have been rubberized, including silks, crêpe de chines, wool, cotton and all other single or double texture fabrics used in the manufacture of rubberized goods. Thus the exposed portions of the garment or article are rendered water-repellant and spot-proof; the linings of ladies' silk rubberized garments are therefore immune from water spotting and single or double texture raincoats of wool, or wool and cotton, will not become water soaked.

It is noteworthy that this finish in no way affects the rubber or the fabric and by reason of the added water-resistant qualities the fabric will last and the garment preserve its appearance for a much longer time than ordinarily. Moreover, if for any reason the seams should separate and water come in contact with the lining, it will be unnoticed as the absorption is prevented by the special finish.

The Cravenette Finish department of the Cravenette company is located at Mount Vernon, New York, where the factory capacity at the present time is about 3,000,000 yards per year.

FIRESTONE "GIANT" SOLID RUBBER TIRES.

There are certain conditions of service under which a single solid tire is superior to two tires fitted as twins on wheels of heavy motor trucks.

The Firestone Tire & Rubber Co., Akron, Ohio, is selling "Giant" single tread solid rubber tires in 8-inch, 10-inch and 12-inch sizes.

These massive single tread tires have deep grooves in the tread to provide against side-slipping and are said to be as near pneumatic resiliency as can be produced in solid tire form.

It is claimed that this construction gives a greatly increased rubber cushion under the load, with a saving in weight in rim parts. Their very appearance certainly suggests strength and durability.

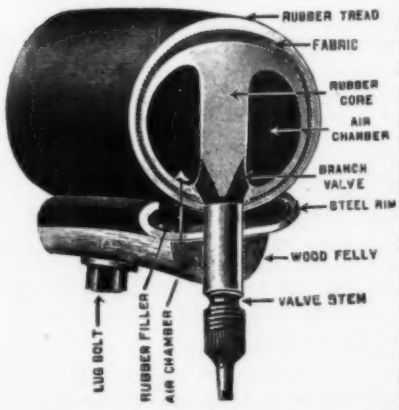
It is understood that the 8-inch "Giant" is considered as an oversize for 4-inch and equal to 5-inch twin tires, the 10-inch being oversize for 5-inch and equal to 6-inch twins, while the 12-inch "Giant" is oversize for 6-inch and equal to 7-inch twins.

These large tires are said to present a great advantage in uniformity of wear. They adjust themselves to the unevennesses of the road, and are built with a broad base to insure better traction when the vehicle has a tendency to skid. The manufacturers anticipate that this form of tire will come rapidly into wider use. [Firestone Tire & Rubber Co., Akron, Ohio.]

THE FEAR-NAUGHT TUBELESS TIRE.

This is a tubeless pneumatic tire that seems to be immune from many of the troubles that threaten the pneumatic tire of ordinary construction. It is said to be proof against blow-outs, due to the sturdy character of the casing, and liability to puncture is greatly minimized by the unusual thickness of the tread. Moreover, should a puncture actually occur, the tire will continue to carry the load without rim cutting, as it is non-collapsible.

It is really a single tube tire divided in the center by an annular rib of rubber, forming two continuous air chambers that are inflated through an air valve of the ordinary type that opens into both chambers. Only one-half of the air pressure required for an average tire is recommended for this one. It is without beads, attachment to the rim being made by eight threaded lugs that are vulcanized in the tire. These pass through the rim and when the nuts are tightened the tire is securely held in place against a rubber liner of annular form that occupies the bead space in the rim. They are made in all sizes to fit clincher and quick demountable rims. The Department of Militia and Defence of Canada has tested these tires with the view of adopting them for military use. The prototype of this tire was illustrated and described in THE INDIA RUBBER WORLD, February 1, 1904. [Fear-Naught Tire Co., Paterson, New Jersey.]



THE DUCO PNEUMATIC TIRE GAGE.

This new English device possesses some novel advantages that will appeal at once to the motorist who realizes the importance of keeping his tires properly inflated. It is, in fact, a combined air pump connection and pressure gage.

It is used in the following manner: The wheel is turned so that the tire valve occupies the highest possible point, the valve stem, therefore, extending downward. The upper part of the device is then slipped over the stem and the air turned on. While the tire is being inflated the air does not come in contact at all with the gage. When it is desired to know if the tire is fully inflated, a valve is operated by pressing the button at the end of the valve stem and the pressure of air in the tire is immediately shown by a hand that points to the figures on the dial gage, indicating the tire pressure. Upon removing the hand pressure from the button the air is at once diverted from the gage and passes directly into the tire. [Brown Brothers, London, England.]

METHOD OF DETERMINING AIR PRESSURE IN TIRES.

Many tires that pass on to the scrap heap are prematurely and needlessly worn out through under-inflation. The amount of air necessary to carry will depend upon the amount of work that is to be done and the load carried. The following method for determining the correct air pressure for different loads is suggested by the Fisk Rubber Co.:

The motorist should determine the load for each tire and regulate his air pressure to carry that load without injury to the tire. To do this, weigh front and rear of the loaded car separately, and divide by two, which will give the weight carried on each wheel.

Now that the weight of load carried by each wheel is known, determine the air pressure by using the factor given opposite the tire size to divide the amount of the load, the result being the pressure required:

3-inch tire	Divide weight of load by 8
3½-inch tire	Divide weight of load by 10
4-inch tire	Divide weight of load by 12
4½-inch tire	Divide weight of load by 14
5-inch tire	Divide weight of load by 16
5½-inch tire	Divide weight of load by 18

Example.—On a 4-inch tire you find the load to be 720 pounds. Refer to above table and note that on a 4-inch tire 12 is the factor: 720 pounds divided by 12 equals 60, therefore inflate the tire to 60 pounds air pressure.

As the load carried by the front tires is usually less than on the rear, by using the method as suggested, it will be determined that less air pressure is needed. The ideal load for the best all around results under average conditions is as follows:

3-inch tires	400 pounds
3½-inch tires	550 pounds
4-inch tires	735 pounds
4½-inch tires	960 pounds
5-inch tires	1,210 pounds
5½-inch tires	1,485 pounds

A load heavier than these figures may be carried, but the resulting pressure necessary to get good tire mileage is usually very hard on the car and its occupants. To obtain best results weigh car as suggested, divide any load by figure given and inflate to that amount; test air pressure at least once a week.

THE EDITOR'S BOOK TABLE.

SIERRA LEONE: ITS PEOPLE, PRODUCTS AND SECRET SOCIETIES. By H. Osman Newland, F. R. Hist. S., F. I. D. [John Bale, Sons & Danielsson, Limited, London, England. 16mo, illustrated, 240 pages. Price 7s. 6d.]

THIS book is more than a guide book, for while it contains a large amount of information regarding Sierra Leone, it is also a personal narrative of the author's experiences during his travels in that country, which being told in a somewhat chatty way, imparts much of this information in a most entertaining style. One chapter is devoted to life on a rubber plantation, and as the author is director of the Peneiro Rubber Estates, Limited, he speaks from experience and with authority. According to the book, the estate visited covers about 3,500 acres, about 18 miles out, on the railroad which runs from Freetown into the interior. *Hevea* rubber has been planted, while *Manihot* or *Ceara* rubber trees were growing wild—the result of former plantings—when the present company took possession. Mr. Newland mentions also the *Castilloa* and the *Funtumia elastica*, explaining the comparative values of these as rubber producers, showing the way in which the latex is secured from the different varieties, and giving various hints valuable for prospective planters in equatorial Africa.

A postscript consisting of more than 40 pages, is contributed by H. Hamel Smith, editor of "Tropical Life," this being devoted mainly to practical planting notes for Sierra Leone and West Africa. Regarding the cultivation of the *Hevea Brasiliensis* he says, "Trees that have been planted are too young at present for me to be able to say definitely whether they will prove a commercial success. All I can say is that they are growing well." In Mr. Smith's postscript are directions for the laying out of an estate; an article on moisture conservation, and directions for cultivating cacao and ground nuts. This is followed by an appendix giving some laws for the guidance of traders. The publishers state that if there is sufficient demand, the book will be issued annually, or biennially, with amendments and additions to date, as the "Sierra Leone Year Book," and with it, a Who's Who section.

IMPORTER'S DIRECTORY OF THE NETHERLANDS EAST INDIES. Published by the Division of Industry and Commerce of the Department of Agriculture, Industry and Commerce, Buitenzorg, Java. [4to, 98 pages. Paper bound.]

It certainly shows that the Dutch Government in the East Indies appreciates the value of publicity to increase foreign trade, when it publishes a directory in English to furnish information to merchants and manufacturers who wish to open trade relations with the local tradesmen. The book is a valuable one, inasmuch as it gives, in well arranged and classified form, the names and addresses of mercantile houses in Borneo, Sumatra, Java, Celebes and the smaller islands of the Dutch East Indies. The rubber trade, of course, is well represented.

NEW TRADE PUBLICATIONS.

ON the cover of a 48-page vest pocket booklet issued by the Dominion Rubber System, the alliterative caption "Foot Facts" and the Dominion seal stand out prominently in red and white against a background printed to simulate leather. The booklet contains practical information concerning care of the feet and of rubber footwear, and the story of the discovery of rubber and its uses, written in an entertaining, popular style with humorous illustrations. There are various data regarding postage, population and other Canadian matters, tables of measurement, a calendar for 1916 to 1918, etc., interspersed with which are advertisements of Dominion rubber footwear, while a number of blank pages afford space for personal memoranda.

* * *

A little advertising card, which includes a blank for using as a post-card in ordering, is sent out by the M & M Manufacturing Co., Akron, Ohio, to describe its inner tube splicers, showing the construction of these little accessories for the tire repairer and the method of using them.

* * *

The Link-Belt Co., Chicago, Illinois, in its latest "Silent Chain Bulletin," calls special attention to its casings for silent chain drives, giving full description, with diagrams and photographs of the casings themselves, and the means taken to render them dust-tight, oil-tight and accident-proof, points of interest to users of power transmission.

* * *

The B. F. Goodrich Co., Akron, Ohio, is sending out a compact little pamphlet entitled "Supporting the Chief," to call attention to its various lines of fire hose, solid tires for fire trucks, pneumatic tires for fire chiefs' automobiles, and also firemen's coats and "Hi-Press" footwear. The booklet is one which will be appreciated by members of fire departments, not only because of the reading matter, but also for the fine illustrations of fire apparatus and firemen in action.

* * *

No. 2 of "Extra Service," a little paper published monthly for free distribution among employes of The Federal Rubber Co., Cudahy, Wisconsin, has been received. It contains news and gossip of the factory, pithy sayings and a large amount of bright matter, interesting to its readers.

* * *

We are in receipt of the first issue of "Miller Talk," a house organ which the Miller Rubber Co., Akron, Ohio, intends to publish monthly. This maiden number is an eight-page leaflet printed on smooth-finished buff paper. The title page is adorned with a picture of the Miller factory buildings and three broadly smiling cartoon figures with hands at ears, typifying the policy of the paper announced further down the page as "A big ear for all the gossip of the shop and a cheerful tongue to pass along the best of it." It is a friendly, chatty little sheet concerning the doings of Miller employes, with good illustrations, cartoons and jokes.

* * *

The motor tire price list of Wood-Milne, Limited, Preston, England, shows some handsome illustrations of new treads of these well-known, English tires; also a description and illustration of the Wood-Milne patent pump for inflating tires, a small, compact machine weighing but a few pounds and contained in a box about 5 by 12 inches. The book contains code words for ordering and full price lists of all the various sizes of tires, the American sizes being listed separately for convenience. A supplementary catalog gives a list of solid band tires made by the same company.

* * *

Henley's Telegraph Works Co., Limited, London, England, has sent out a new price list of electric cables and wires, insulated with vulcanized and unvulcanized india rubber. It is a comprehensive work of over 100 pages, giving full descriptions and specifications of the many lines of cables, bell wires and flexible cords, and jointing materials made by this concern. A description is given of the Henley wiring system, the method of running electric wires on the surfaces of walls, and other matter of interest to users of cables and electric conductors.

* * *

The India Rubber, Gutta Percha & Telegraph Works Co., Limited, London, England, has sent out various price lists in uniform size, that they may be secured in the convenient binder furnished by this company. There have recently been received from this concern individual price lists of mechanical and general rubber goods; rubber gloves, gauntlets and mitts; matting; vulcanized fiber; waterproof fabrics; confectionery molds; balata belting and cycle tires. Each of these is well printed, and in

most the various articles comprised are illustrated, these illustrations being mainly finely engraved half-tones, while many of the lists contain matter descriptive of the manufacture, quality and use of the articles. This company is also sending out small pamphlet price lists of its various lines of automobile and truck tires.

* * *

A new semi-monthly journal entitled "Aviation and Aeronautical Engineering" is now being published by the Gardner, Moffat Co., Inc., New York City. It is a handsomely illustrated and finely printed magazine, very largely devoted to the theoretical, technical and mechanical problems of aeronautics, and contains papers by well-known engineers in this comparatively new science. The technical editor is A. Klemin, A.C.G.I., B.Sc., S.M.; the managing editor, Herbert M. Williams, B.S., and the military editor, Philip J. Roosevelt. Undoubtedly this journal will fill a special niche, and will find a clientele of its own in the line of aviation.

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest, not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

[217.] Inquiry has been received for names of rubber brokers with offices at San Francisco, California, or Seattle, Washington.

[218.] The names of firms making tissue paper transfers for marking inner tubes are requested.

[219.] Manufacturers of inner tube skiving machines are sought.

[220.] Names of concerns specializing in the manufacture of aluminum cups used in tapping rubber are requested.

[221.] A request has been received for names of firms supplying Dichlorethylene.

[222.] We are in receipt of an inquiry for vulcanizing accelerators.

[223.] A correspondent wishes to know where he can secure cotton linters for use in rubber shoe soles, and the fluffy fibrous waste that results from buffing automobile tires.

[224.] A correspondent wishes to know where he can secure a copy of "Dives' Plain Talks on Rubber."

[225.] Addresses of concerns making ivory or celluloid parts for "pacifiers," also the gelatine or jelly filling, are requested.

[226.] We have been asked who manufactures the Grieve Inflatable Waistcoat.

[227.] Addresses are requested of rubber companies making a business of selling stock to manufacturers of automobile tires, calendered and ready for use.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A firm in the Netherlands desires to communicate with American manufacturers and exporters of fancy rubber articles. Report No. 22,426.

A business man from Spain, now in the United States, wishes to enter into commercial relations with American manufacturers of rubber goods. Report No. 22,458.

DRAWBACK ALLOWANCES.

The following are the amounts and names of concerns to which the Treasury Department of the United States has paid drawback allowances on exported goods relating to rubber, manufactured in whole or in part from goods previously imported into this country:

Cotton Waterproof Cloth: J. L. Multy Co., $75.02; C. Stohns Sons, Inc., $682.48; Blumenthal & Co., $794.68, due $72.17; Garner Print Works & Bleachery, due $96.67; Rigby Waterproofing Co., $2,885.05; Stowe & Woodward Co., due $10.69.

Wool Waterproof Cloth: Commonwealth Manufacturing Co., $1,093.40; Cravenette Co. of New York, $5,087.79; Einstein Manufacturing Co., $4,063.61; Firth & Foster, $367.51; London Shrinking & Finishing Works, $28.07; Manhattan Manufacturing Co., $318.94; Julius Kallman Co., $11.43; Bradford Dyeing Association, $5.20; Kennedy & Britt, $214.14.

JUDICIAL DECISIONS.

Dickson & Co., Limited, vs. Devitt. Messrs. Dickson & Co., Limited, were the agents in London of the Third Mile (Federated Malay States) Rubber Co., Limited, which had bought rubber washing machinery in England to be shipped to Singapore. On November 8, 1915, Messrs. Dickson instructed the defendant to "insure, marine and war risks, machinery to the value of £500 [$2,433] despatched for shipment to-day per steamer 'Suwa Maru' or other steamers, London to Port Dickson." The defendant effected an insurance on the machinery against marine risks per "Suwa Maru" or steamers from London to Port Dickson, but by some mistake only effected an insurance on the machinery against war risks per "Suwa Maru." The machinery was not taken by the "Suwa Maru," but on December 9 was shipped in the "Yasaka Maru," which was torpedoed in the Mediterranean Sea, and the goods were lost. The plaintiffs were unable to recover on the policy against war risks because that policy only insured the goods per the "Suwa Maru." They therefore brought action against the insurance broker Devitt, alleging that through his negligence and breach of duty they had been unable to recover the loss of £500 under the policy, and they claimed that sum.

The British Court held that a client was entitled to rely on a broker carrying out his instructions to insure, and that the client was not, as between himself and the broker, bound to see whether those instructions had been carried out and to look at the documents himself. If the policy had been in accordance with their instructions the plaintiffs would have been covered, but as it was not in accordance with those instructions they were not covered, and, therefore, the loss must fall upon the defendant.

Fabric Fire Hose Co. v. Town of Caddo and Others. This was an action for material furnished to a municipal corporation. The Supreme Court of Oklahoma held that where a plaintiff sues upon a claim against a municipality for material furnished, and proves his contract and delivery of the material to the municipality, and that the debt therefor is due and unpaid, he makes a *prima facie* case, and the burden of the proof is then upon the municipality to establish that the debt was illegally contracted. [The Pacific Reporter, Vol. 158, page 350.]

Consolidated Rubber Tire Co. and Others v. Diamond Rubber Co. of New York. This case, relating to the Grant tire patent, was the subject of an article in The India Rubber World for May, 1916. The Circuit Court of Appeals, in New York City, held that where a defendant has deliberately and persistently infringed a patent, even after its validity was established, any doubts as to the amount of damages for which it is liable will be resolved against it. That, in finding an established license fee under a patent as a basis for computing damages for infringement, the law does not require that all license fees should have been for exactly the same amount at all times. Approximately $210,000 damages were awarded to the plaintiffs. [The Federal Reporter, Vol. 232, pages 475, 508.]

A guarantee of 4,000 miles of service is now furnished with "Tyrian" tires, manufactured by the Tyer Rubber Co., Andover, Massachusetts, together with direct factory service to customers located near the factory. This company invites automobilists to visit the factory and inspect the manufacture of these tires.

Interesting Letters from Our Readers.

RUBBER AND THE BARKLEY BILL.

To the Editor of the India Rubber World:

DEAR SIR—The Barkley bill imposing penalties upon those who misbrand goods may have its merits. While it appears to be a drastic measure which would make amenable and probably hamper certain rubber manufacturers who employ the words "pure gum," "pure rubber" or "pure Para" to describe their products as well as those who claim that their goods are "all rubber," or "contain nothing but pure rubber," still its equity of principle cannot be denied. It is admittedly difficult to frame any law incapable of imposing hardship upon some one, and so with the Berkley bill, yet it will surely prove of greater potential benefiet than injury to the rubber business as a whole, tending to eradicate extravagant, indefinite and false statement and leading the way toward an accurately descriptive nomenclature.

Every rubber expert knows that substances other than rubber itself are essential to the production of rubber articles of every sort, the gum being virtually useless in a pure state. Just as an alloy of copper and zinc gives us brass, having important characteristics not possessed by either constituent metal, so rubber compounds contain legitimate ingredients other than pure rubber which impart desirable qualities not inherent in the gum alone. There is nothing about this to conceal and business foresight should have counseled against the use of catch phrases that might seem to do so, whatever the actuating motive. Certainly the enactment of the proposed law will in no wise damage manufacturers of honest goods; their reputation and popularity of product cannot suffer as a result of truthful statement in their own or competing publicity.

The rubber business is by no means exceptional in that some of its nomenclature is misleading. The term "solid gold," for instance, intended primarily to distinguish between gold plate and metal of uniform consistency throughout, is well known to infer part alloy introduced in small proportion to increase the durability of jewelry, and in larger proportion to cheapen it. Almost invariably, though, the term is qualified by the marking 10k., 14k., 18k., etc. This informs the purchaser what he should receive and places the matter on a definite basis subject to expert analysis so that failure of jewelry to measure up to the indicated standard constitutes an actionable case of misrepresentation. By comparison the notably lax terms of the furniture trade seem obviously dissembling. "Mahogany," for example, means mahogany veneer, not "solid mahogany," according to common usage. This may be the truth, but it is not the whole truth. But furniture manufacturers are awaking to the necessity of reform, and with the aid of their trade papers are now attempting to abolish the misuse of the phrase "American quartered oak" as so frequently applied to furniture which is neither American in spirit nor quartered oak in fact.

It is chiefly against such flagrant misrepresentations that the war of truth in advertising is now being waged so assiduously by the Associated Advertising Clubs of the World. Business acumen calls upon every conscientious advertiser to lend his hearty support to this movement. Indeed, the time is at hand when it behooves the advertisers in every kind of industry to restrain by concerted action those who use the legitimate parlance of the trade falsely with fraudulent intent, and to purge the trade vocabulary of all inadequate terms, not only those inexact phrases which may mislead the public harmlessly, but those fine sounding yet indefinite phrases with which unscrupulous manufacturers may cloak a multitude of sins or take advantage of conscientious competitors in dealing with poorly informed persons.

Happily the primary object of the loose terms common to the rubber trade has not been to deceive, although in certain instances they may have been resorted to in an attempt to distinguish between honest goods and those containing adulterants or made with scrap rather than new rubber. For the most part they have been adopted in response to the spirit of the times and as a direct outgrowth of pure food laws and advertising campaigns and their effect upon other lines of goods. The mistake has been in ignoring the fundamental fact that all rubber products are fashioned out of rubber compounds rather than pure gum. To infer anything otherwise courts distrust among those hundreds of thousands of intelligent persons who know something about the making of rubber goods, even though in a very general way; also it is unfair to those conscientious manufacturers who prefer to tell the strict truth even if not the whole truth.

It might be argued that if any article has the desired appearance, serves the intended purpose and possesses reasonable durability it does not really matter whether it be composed of pure rubber or what not, but this is beside the question. The same might be said of a diamond ring. The purchaser is entitled to know what he is buying and to receive an article equivalent in value to the price paid. There is no adequate reason for any misleading statement about it whatever, whether it be made in good faith or otherwise. To countenance inaccurate descriptive phrases and permit them to become the so-called technical terms of the trade is a grave mistake that will eventually redound to the detriment of any business. Were rubber publicity of this character directed solely to the trade, the issue would not be of serious moment, but instead it makes its appeal to the public at large. And this explains its very existence, for addressing such inaccurate phrases to the trade would manifestly be an insult to expert knowledge.

Viewed from every angle the Barkley bill offers a potent instrument with which to accomplish much permanent good in the rubber business as well as elsewhere, and its enactment should be welcomed by progressive men of integrity and foresight who seek to build reputations for the future as well as fortunes for the present.

Trade Critic.

OUTSIDE HELP FOR RUBBER MILL ENGINEERS.

To the Editor of The India Rubber World:

DEAR SIR—The rubber industry, like any of the other great industries of modern development, has had to create its own tools and methods of manufacture, rather than find them ready made to hand. The mechanical engineer of the average plant is the hardest worked man in the whole outfit; at least it would seem so, and if you ask him he will probably admit it himself. Usually a machine shop of very elaborate proportions is attached to all important plants, and the production of special machinery suited to the needs of the plant is an important factor in its organization. Inventive ability and technical ability of all sorts are employed and liberally paid. A way must be found leading out of all kinds of difficulties. The success of the plant is largely dependent upon the ingenuity and resourcefulness of the engineers working in its mechanical department, assisted by a corps of able helpers, and having at their beck and call all kinds of apparatus and facilities for experiment.

Very little study or interest has been given to the troubles and problems of the mill engineer by the average machine shop, outside the walls of these plants, except in some few notable cases where independent machine shops doing general work have really taken a leading part in the production of improved machinery useful in the rubber industry. In the average case the mechanical engineer has the whole burden of the development of labor-saving machines. Machine builders as a rule have been content to follow, rather than lead, and have contributed very little towards the special equipment required in building up their industry. Cases where any creative work in the line of special machine design has been undertaken voluntarily and on the sole initiative of the outside shop, are unfortunately far too few.

The mill engineer welcomes assistance, and does everything to encourage it, but the average machine shop for general work waits to be told what to do and how to do it, rather than buck up and give the mill engineer a helping hand.

The doctrine of coöperation is the only sound one in industrial development. The average plant producing rubber goods is strong financially, and is willing to pay handsomely for the proper sort of coöperation from outside sources in solving its problems. When an industry devoted to the production of rubber goods is obliged practically to go into the machinery business, just so much of its energy, thought and genius as it bestows on the machinery business are lost to the rubber business. The machinery business is the business of machinists. Mechanical problems are naturally the problems with which the machinery business should cope, rather than leave their solution to the skill and ability of engineers in other lines.

Of course it is not possible for machine builders to foresee and to provide for all kinds of contingencies arising in the constantly varying requirements, and new requirements, in the production of rubber goods. It is not too much to ask, however, that a little more "pep" and "punch" be put into the efforts of machine designers outside of the rubber plants. It is not too much to expect the experienced machinery houses to bring out labor-saving machinery which would go the mill engineer "one better." The mill engineer is only too willing to pin a medal on the successful designer, and leave the honors to the machinery trade, if only he can get from it the help he needs and is willing to encourage liberally.

THE CAMERON MACHINE CO.

Brooklyn, New York, September 20, 1916.

[THE INDIA RUBBER WORLD has always made a point of encouraging coöperation between machine builders and the trades employing machinery. Its columns are always open to machine builders who have produced something useful to the rubber trade. In fact we write hundreds of letters each year inviting producers of new machines to bring them before the trade through our columns.

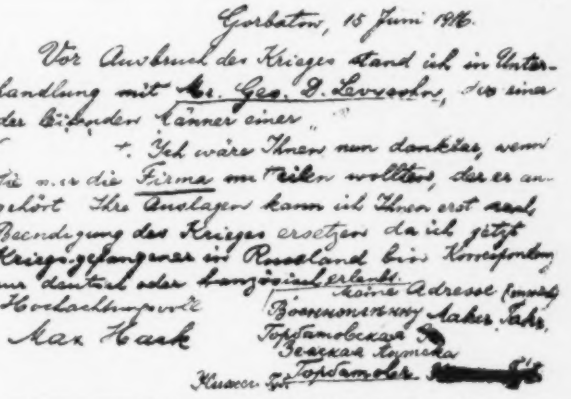
The products of the Cameron Machine Co. are cases in point. The Cameron principle, the "Score Cut," appealed to us at once and that is why we have so willingly given space to the various Cameron slitting machines. Although it is perhaps not necessary, we assure them, or any other producer of rubber working machines or devices, that our columns are open to them provided, of course, that their products are of value to the rubber trade.—THE EDITOR.]

RUBBER MEN JOIN QUESTION CLUB.

The Question Club is a unique and highly exclusive organization which carefully preserves the secret of its name, purposes, and qualifications for membership. Organized 12 years ago with five members, five new members have been added to the roll, each year since, in every case men of power in their respective callings. Two of the five enjoying the honor of election this year are Charles McCullough, of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, and William J. Lamb, of the Fisk Rubber Co., Chicopee Falls, Massachusetts.

FROM A RUSSIAN PRISON CAMP.

THAT THE INDIA RUBBER WORLD is considered the headquarters for all facts pertaining to the rubber industry was brought vividly to mind recently by the receipt of a postal card from a captured German soldier in a Russian prison camp. The card is here reproduced photographically, both the face and back. The face shows the address, and also the permit or "frank" (in Russian and French) to allow it to go through the mails free of postage because sent by a prisoner of war. The message on the back has been allowed to go forward, after the censor has erased the name of the firm, presumably a German one, and obliterated



A CENSORED POSTAL CARD FROM RUSSIA

with dense black ink a portion of the address at the bottom. A translation of the message is as follows:

"Gorbatow, June 15, 1916. Prior to the outbreak of the war I was in communication with Mr. Geo. D. Levysohn, one of the executives of————.....———(erased by censor)..... I would be very thankful to you if you would inform me of the name of the firm with which he is now connected. I can compensate you for your trouble only after the end of the war, for I am now a war prisoner in Russia. Correspondence is only allowed in German and French. Respectfully yours, Max Hack.

My address is (in Russian), Boennoninny Maker Jahr, Topdamobekara, Zeńckaa Anmeka, Topdamobr, Russia."

The card is interesting as a side-light on the censorship of the mails since the war began.

Contract has been made for the first unit of the tire factory of the International India Rubber Corporation at South Bend, Indiana, mentioned in the July issue of THE INDIA RUBBER WORLD. The dimensions of the building will be 382 by 80 feet, and it will cover 28,700 square feet of floor space

TENNIS SHOES FOR SUMMER OF 1917.

THE manufacturers of rubber-soled, canvas upper footwear, variously designated as sneakers, tennis shoes, sport shoes, etc., and "Keds" (the new name), publish their price lists for the summer season early in the fall previous, generally about September 1. On that date the United States Rubber Co. sent out its net price list, as did also the Canadian Consolidated Rubber Co., Limited, and soon after most of the other manufacturers issued lists which closely approximated in prices those of the previously mentioned companies.

There had been some apprehension on the part of customers that the new prices would show a heavy advance. Crude rubber prices had changed somewhat from those of a year ago, although the higher cost of Brazilian varieties was practically offset by lesser values for plantations. But practically every other material which entered into the manufacture of these shoes has enhanced in value, while labor costs are quite a little higher than a year ago. There was considerable surprise manifested, therefore, when the conservative advance in prices was noted; none of these over 10 cents a pair, some of them less, while a few were continued at the same prices as a year ago.

Last year several companies introduced lines of rubber-soled canvas shoes without the rubber foxing. These simulated welt-sewed shoes, and were generally designated as welts, or of "welt construction." The popularity of these lines has been such that the manufacturers are preparing for much larger sales the coming season. These shoes cost somewhat more to manufacture, and the prices range from 10 to 20 cents a pair more than similar shoes of the older construction.

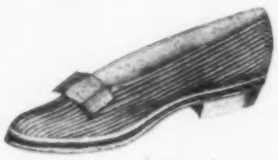
There is a noticeable increase in the number of lines of shoes with full heels. Manufacturers have found it necessary to place stiffeners, of metal or fiber, in the shanks of these to insure against discomfort to the wearers.

In no particular has the improvement in tennis lines been more manifest than in the matter of lasts. But a few years ago there was practically but one shape of toe. Now there are wide and narrow toes, straight and nature-shaped lasts, while the better fitting of the material to the lasts, and the addition of leather reinforcements of seams, make to-day's tennis lines as trim and stylish as the products of manufacturers of fine leather shoes.

A new name has been invented for this style of footwear. It is "Keds." This word is to be used in place of "tennis" or "tennis shoes" by the United States Rubber Co., to identify its lines, in contradistinction with similar goods of other makes. This word is the keystone of a most comprehensive campaign of advertising to the consumer trade. Incidentally, it may be stated that the company will run a similar campaign to popularize its raincoats under the newly-coined word of "Raynsters."

The United States Rubber Co.'s catalog and price list of sporting and tennis shoes for the season of 1916-17 is a pamphlet of 36 pages showing in neat half-tones the many lines of canvas upper, rubber-soled shoes made by this company. Each page is devoted to a special line and is ornamented with a blue border having the word "Keds" at the top and a picture at the bottom appropriate to the line shown on the page. The changes in prices on United States Rubber Co.'s tennis goods are as follows:

WOMEN'S PARADE PUMP OF WHITE DUCK, WITH HEEL. UNITED STATES RUBBER CO.



PARIS PUMP OF GRAY STRIPE FABRIC. APSLEY RUBBER CO.

YACHTING OXFORD OF BROWN STRIPE FABRIC. APSLEY RUBBER CO.

ADVANCE PRICES.

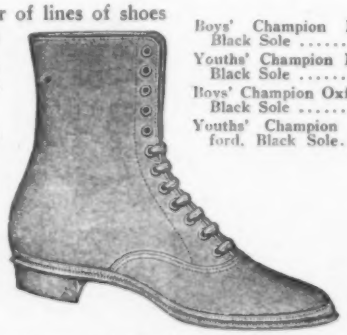
	1915-1916.	1916-1917.
Men's Rotary Bals.	$1.60	$1.70
Men's Rotary Oxford	1.45	1.55
Women's Rotary Bals.	1.40	1.50
Women's Rotary Oxford	1.25	1.35
Men's Bonair Bals.	1.40	1.50
Men's Bonair Oxford	1.25	1.35
Women's Bonair Bals.	1.25	1.35
Women's Bonair Oxford	1.10	1.20
Men's Week-end Bals.	1.10	1.20
Women's Week-end Bals	1.00	1.05
Boys' Week-end Bals.	1.05	1.10
*Youths' Week-end Bals	1.00	1.00
Men's Week-end Oxford	1.00	1.10
Women's Week-end Oxford	.90	.95
Boys' Week-end Oxford	$0.95	$1.00
*Youths' Week-end Oxford	.90	.90
Men's Bathing Shoes	.45	.47
Boys' Bathing Shoes	.40	.42
Youths' Bathing Shoes	.37	.39
Women's Bathing Shoes	.37	.39
Misses' Bathing Shoes	.37	.39
Children's Bathing Shoes	.32	.34
Women's Bathing Shoes, High Cut	.55	.57

*No advance.

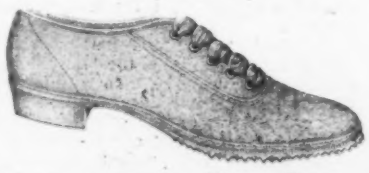
LOWER PRICES.

	1915-1916.	1916-1917.
Boys' Champion Bals, Black Sole	$0.63	$0.60
Youths' Champion Bals, Black Sole	.60	.57
Boys' Champion Oxford, Black Sole	.53	.50
Youths' Champion Oxford, Black Sole	.50	.47
Boys' Champion Bals, Gray Sole	$0.68	$0.65
Boys' Champion Oxford, Gray Sole	.58	.55
Youths' Champion Bals, Gray Sole	.65	.62
Youths' Champion Oxfords, Gray Sole	.55	.52

ROTARY OXFORD, WITH WELT AND FULL HEEL, WHITE DUCK AND WHITE SOLE. UNITED STATES RUBBER CO.



WOMEN'S HIGH CUT QUARTER DUCK BAL OF PALMETTO DUCK. UNITED STATES RUBBER CO.



UNIVERSAL OXFORD, WHITE DUCK, GRAY SOLE, NARROW FOXING, FULL HEEL, UNITED STATES RUBBER CO.

The Apsley Rubber Co., Hudson, Massachusetts, sends out its net price list in a 24-page pamphlet with a four-color cover. The half-tone engravings of the various lines are excellently drawn and well printed, some of them being shown in appropriate colors. Among the novelties is a line of pumps and Oxfords made from a new fabric in brown and gray stripes. Another noticeable addition is a wading shoe having a pure gum suction sole and a high lacing, with bellows tongue. An "Auto" gymnasium shoe with high foxing is another addition to this popular line.

The Canadian Consolidated Rubber Co., Limited, Montreal, Canada, devotes its September issue of "Foot Prints" to a catalog of sport shoes. This is a larger catalog than those previously mentioned and contains a very comprehensive list of the various lines made by this company. The illustrations are well drawn and engraved, and show some novelties, among them the new "Aviator" shoe shown and described elsewhere in this issue. Another novelty is a lawn bowling shoe similar in design to a line made in England which was illustrated in the September number of THE INDIA RUBBER WORLD. This catalog includes a number of lines of bathing shoes, bathroom and boudoir slippers, etc.

* * *

The Miner Rubber Co., Limited, Montreal, Canada, also uses its monthly house organ as an outing shoe catalog, which is quite elaborate in its arrangement, each page embellished with a well drawn illustration in colors, appropriate to the line of shoes mentioned on the same page, the "Greyhound" trade-mark being printed in outline at the top and the brand, "Miner's Greyhounds," at the bottom. The various lines are shown in color and particular attention is called to the pneumatic heel styles, and the lines made by the pressure cure process. Among the new ideas shown are the "Educator" line for children, the "Tramper" balmoral with high foxing and wing tip, and the "Beach" balmoral of white canvas with a tan rubber sole and heel but with white rubber foxing.

RUBBER EXHIBITS AT FIRE ENGINEERS' CONVENTION.

In connection with the forty-fourth annual convention of the International Association of Fire Engineers, at Providence, Rhode Island, August 29 to 31, a fine exhibition of fire apparatus and appliances was shown in the Armory building, among which might be mentioned the hose manufactured by the Bi-Lateral Fire Hose Co., Chicago, Illinois, and the Fabric Fire Hose Co., New York City. The Bowers Rubber Works, San Francisco, California, had an interesting exhibit of its pneumatic reversible landing mat, recently illustrated in THE INDIA RUBBER WORLD; the Dayton Rubber Manufacturing Co., Dayton, Ohio, exhibited its airless tires for use on fire apparatus; the Globe Manufacturing Co., Pittsfield, New Hampshire, made a good display of waterproof clothing; the New England Truck Co., Fitchburg, Massachusetts, had on exhibition a chemical and hose car equipped with large Goodyear pneumatic tires, and the Sewell Cushion Wheel Co., Detroit, Michigan, showed one of its cushion wheels for fire apparatus with part of the side steel bands and rubber flanges removed to show the position of the soft rubber cushion between the inner wheel and the tire felly, giving a very clear idea of its construction. There were many other exhibits of interest.

THE RUBBER CLUB OF AMERICA, INC.

The Seventeenth Annual Banquet of The Rubber Club of America, Inc., will be held in New York City on Monday evening, January 8, 1917, in the Grand Ballroom of the Waldorf-Astoria. The unqualified success of the last banquet and the general assurance that the coming event will bring out a much larger attendance have resulted in preparations being made to accommodate the expected numbers. An attractive program has been arranged and speakers of national reputation will entertain and edify the members and guests present.

The Executive Committee met at the Union League Club, New York City, September 21. Those present were: Van H. Cartmell, who presided; George B. Hodgman, William E. Bruyn, Paul W. Litchfield, Frederic C. Hood, Henry C. Pearson, Sidney S. Meyers, attorney, and Harry S. Vorhis, secretary.

A special committee consisting of Messrs. Pearson, Bruyn, Meyers and Vorhis was appointed to take up with the Treasury Department the classification of Pontianak now dutiable at 10 per cent ad valorem.

The Banquet Committee was recommended to appoint district committees for Boston, Trenton, Akron, San Francisco and Montreal, that interest in the annual banquet be furthered.

The following firm and associate members were elected:

FIRM MEMBERS.

Gordon Tire & Rubber Co., Canton, Ohio
Representative—H. B. McMaster.

The Falls Rubber Co., Cuyahoga Falls, New York
Representative—W. J. O'Donnell.

Turner Vaughn & Taylor Co., Cuyahoga Falls, Ohio
Representative—S. H. Vaughn.

The Alliance Tire & Rubber Co., Alliance, Ohio
Representative—Milton Bejach.

Connecticut Cottons Co., Boston, Massachusetts
Representative—Harry L. Burrage.

Featheredge Rubber Co., Inc., Chicago, Illinois
Representative—B. B. Felix.

ASSOCIATE MEMBERS.

P. T. Jackson, Bay State Cotton Corporation, Boston, Mass.

The following transfer of firm membership was made: The B. & R. Rubber Co., North Brookfield, Massachusetts, to Quaibaug Rubber Co., North Brookfield, Massachusetts. Representative, T. G. Richards.

The following transfers from associate to firm memberships were made: W. G. Ryckman, New York City, to W. G. Ryckman, New York City. Representative, W. G. Ryckman; George Watkinson, New York City, to Standard Emarex Co., New York City. Representative, George Watkinson.

Discussions and routine business followed, closing one of the most satisfactory meetings held by this committee.

SALESMEN, AGENCY REPRESENTATIVES, AND FACTORY EXECUTIVES OF THE FAULTLESS RUBBER CO. AT A RECENT CONVENTION.

NEW INCORPORATIONS.

Albany Rubber Tire Co., Inc., September 14 (New York), $3,000. Jennie F. Hurd, Edward M. Hurd, M. O. O'Donnell—all of Albany, N. Y.

Auto Ball Cock Co., August 11 (New Jersey), $125,000. Robert B. Barber and Jane Massey Barber, Hazelton, Pa.; William E. Massey and Mina R. Massey, 1001 Wesley avenue, Ocean City, N. J. Principal office, 421 Eighth street, Ocean City, N. J. To manufacture and deal in automatic plumbing supplies.

Chase National Import and Export Corporation, September 6 (New York), $5,000. George H. Warrin, 478 Marion street; Albert E. Baker, 552 Forty-seventh street, and Leon Dalrymple, 162 Lefferts place—all in Brooklyn, N. Y. Principal office, 25 Beaver street, New York City. To deal in South American products, rubber, etc.

Chemical Pump & Valve Co., August 11 (New Jersey), $30,000. Frank A. Warter and Emil Warter, Perth Amboy, and Fred Batzel, South Amboy—both in New Jersey. Principal office, 46 Commerce street, Perth Amboy, Middlesex County, N. J. To manufacture and deal in pumps, valves, and tanks.

Eagle-Picher Lead Co., September 2 (New Jersey), $10,000,000. William Wood, Thomas J. McCoy, Alfred Burdsal, William C. Wood, and John Ritterhoff. Principal office in State of New Jersey is at Blanchard street, Newark. To manufacture and deal in lead and zinc products.

Elastic Braid & Lace Co., August 11 (Massachusetts), $25,000. Charles M. Porter, 112 Boston avenue, Somerville; George Fickeissen, 63 Reynolds avenue, Chelsea, and William E. Waterhouse, 46 Lake avenue, Melrose—all in Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in elastic braid, laces, braided fabrics and similar products.

Fero's Lexington Store, Inc., September 22 (New York), $10,000. James J. Fero, and William A. Miller, 792 Seventh avenue, and Alfred Hines, 1074 Lexington avenue—both in New York City. To deal in tires, auto supplies, etc.

Goodrich Auto Service Corporation, F. W., September 22 (New York), $75,000. Frank W. Goodrich, 312 East Fifty-eighth street; Peter V. Hoyt, 745 St. Nicholas avenue, and Henry W. Showers, 15 Wall street—all in New York City. Tire and auto service station.

M. & L. Auto Co., Inc., The, August 10 (New Jersey), $25,000. R. C. McIntosh (president and treasurer); Norman D. Laughlin (vice-president and secretary), and Silvia D. McIntosh (stockholder)—all of Plainfield, N. J. Principal office, 322 West Front street, Plainfield, N. J. To deal in automobiles, tires, oils and accessories.

Meyer Tire Duck Co., John H., September 11 (New Jersey), $300,000. John T. Neff and Rollin G. Neff, 26 Beach street, East Orange, N. J., and Samuel C. Steinhardt, New Rochelle, N. Y. Principal office, 26 Beach street, East Orange, N. J. To manufacture and deal in cotton and other fabrics.

Mutual Tire & Rubber Co., August 22 (Delaware), $1,000,000. E. E. Bishop, M. L. Gatchell, and I. M. Bristow—all of Wilmington, Delaware. Principal office, Corporation Registry Co., 900 Market street, Wilmington, Del. To manufacture and deal in tires for automobiles, motorcycles, bicycles, carriages, and vehicles of all kinds.

Newark Rubber Tire Co., Inc., September 6 (New Jersey), $10,000. Harry J. Martin, 67 Cabinet street; William F. Rothlisberger, 49 Osborne Terrace, and Joseph P. Dunn, 266 Halsey street—all in Newark, N. J. Principal office, Room 804, 810 Broad street, Newark, N. J. To deal in rubber tires, automobile supplies and accessories.

Northway & Christopher, Inc., September 14 (New York), $5,000. George S. Northway, John H. Burke and Daniel J. Seubert—all of Syracuse, N. Y. Principal office, Syracuse, N. Y. To manufacture and deal in rubber goods, tires, etc.

Para Co., The, August 19 (New Jersey), $10,000. Irving L. Wright, 918 Stuyvesant avenue; George W. Pearson, P. O. Box No. 444; S. Roy Heath, Fisher place, and Harold S. Maddock, 15 Atterbury avenue—all in Trenton, N. J. Principal office, 7 North Montgomery street, Trenton, N. J. To manufacture and deal in tires.

Peerless Tube Co., August 28 (New Jersey), $50,000. Charles O. Geyer, W. F. Harding, and Lewis H. Condit, Jr.—all of 70 Locust avenue, Bloomfield, N. J. G. H. Neidlinger (president), C. R. Pitt (treasurer). Principal office, 70 Locust avenue, Bloomfield, N. J. To manufacture and deal in cement tubes, etc.

Phineas Jones & Co., May 15 (New Jersey), $100,000. Henry P. Jones, Phineas Jones, and H. Percy Jones—all of 45 North Broad street, Newark, N. J. To manufacture and deal in tires, wheels, etc.

S. Schein & Sons, Inc., August 28 (New York), $20,000. Joseph S. Schein, 816 East 176th street; Jacob M. Zinaman and Avel B. Silverman, 51 Chambers street—both in New York City. To deal in rubber, gutta percha, balata, etc.

Sioux City Tire & Manufacturing Co., August 30 (Iowa), $220,000. C. F. Skirvin (president); John Nagle (treasurer), and Charles F. Sawyer (secretary)—all of Sioux City, Iowa. Principal office, 607-609 Trimble Block, Sioux City, Iowa. To manufacture rubber goods, automobile tires, etc.

Tire Company of California, Inc., September 20 (New York), $7,500. Sydney Bernheim, 35 Nassau street, New York City; Catherine A. Weldon, 591 Seventh street, and Harry H. Jacobson, 555 Grand street—both in Brooklyn, N. Y. To manufacture auto tires, etc.

Triple Tread Tire Co., August 10 (Illinois), $500,000. H. G. Lund (president), 4720 Dorchester avenue; M. Lund (secretary), 7219 South Park avenue, and Edward Grunich—all of Chicago, Illinois. Principal office, 1545 Michigan avenue, Chicago, Illinois. To manufacture and deal in tires, inner tubes, etc.

Vulcanized Rubber Co., June 20 (Maine), $1,500,000. Alfred F. Jones (president); T. L. Croteau (treasurer), and James E. Manter (clerk)—all of Portland, Maine. To manufacture and deal in crude rubber, lumber, merchandise, etc.

Washington Rubber Products Manufacturing Co., Inc., August 29 (New York), $5,000. Henry Siegel, Abraham S. Gussew and Alexander Meyer—all of 5 Beekman street, New York City. To manufacture rubber goods, especially bathing caps, folding bags, auto tops, etc.

BERLIN RUBBER CO. CHANGES ITS NAME.

By order of the council, the name of Berlin, Ontario, Canada, was changed to Kitchener, September 1. The Berlin Rubber Manufacturing Co., Limited, its leading industry, in accordance with the above change, has renamed the corporation, and is to be known hereafter as the Kitchener Rubber Manufacturing Co., Limited.

MAPLE LEAF TO BUILD.

Maple Leaf Tires, Limited, Toronto, Canada, has begun the erection of a new plant at Belleville, Ontario. The property was originally part of the Yeoman's estate and contains approximately 23 acres. The main building will be 281 feet long and the width throughout 62 feet, with two large extensions or wings to the northward making the total width 125 feet. Several subordinate buildings will also be constructed as speedily as possible. The factory will be equipped with the best modern machinery obtainable, every comfort for the workmen being considered. The approximate cost will be $100,000 and employment will be given at the start to about 100 hands. The company expects to manufacture 250 tires daily and many other rubber products, such as belting, garden and water hose, shoe soles and heels, rubber bottles, etc.

"After carefully considering the exceptional performance of

GOODRICH DE LUXE TRUCK TIRES

(Made in 5-inch, 6-inch and 7-inch widths)

We specified them for 50 new 5-ton White trucks."

—Stedman Bent here explains his need for tires that will keep his heavy trucks constantly at work. He knows the importance of equipping with tires that will combine, to the best advantage, these essentials:

—Big mileage

—Minimum of vibration

—Assurance of long truck and tire life

—More riding comfort

—He experimented with other makes. But now he places confidence and faith in *one* tire only. That tire is

Goodrich De Luxe

—He tells why. Aren't his arguments logical? Don't they suggest a good lead for *you* to follow in solving the problem of tire equipment for your most severe trucking proposition?

Write for catalog

THE B. F. GOODRICH COMPANY
Akron - Ohio

Makers of the Celebrated Goodrich Automobile Tires—
"Best in the Long Run"
Service Stations and Branches in All Important Trucking Centers

STEDMAN BENT
3003 FINANCE BUILDING
PHILADELPHIA, PA

NEW YORK OFFICE
114 LIBERTY STREET

July 14, 1916

The B. F. Goodrich Company,
Philadelphia, Pa.

Attention Mr. H.C.Krimmel,
Mgr. Truck Tire Dept.

Dear Sir:

No doubt you will be pleased to learn that we have just placed our order with the White Company for fifty five-ton trucks, on which we have specified Goodrich De Luxe tires.

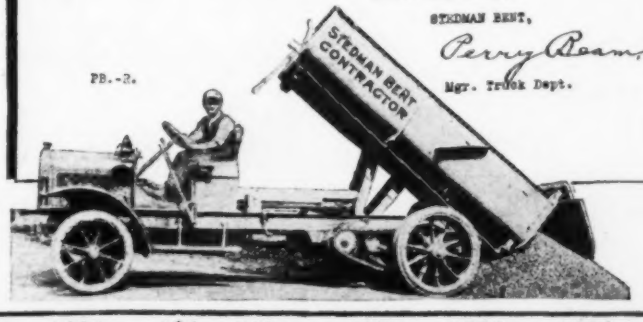
We made the selection after carefully considering the exceptional performance of this tire, and your facilities for prompt service, as we realize that our trucks will be subjected to abnormal uses in the various kinds of work which they will be called upon to do.

These trucks will be specially equipped for all classes of heavy hauling, consisting of platform stake bodies, power dump bodies, covered bodies, van bodies and platform bodies equipped with power winches for loading heavy machinery, pulling cable, etc.

This will give us a fleet of 66 five-ton White Trucks, practically all of which are equipped with Goodrich Tires.

Yours very truly,
STEDMAN BENT,
Perry Beam
Mgr. Truck Dept.

PB.-R.



NEW INCORPORATIONS.

Albany Rubber Tire Co., Inc., September 14 (New York), $3,000. Jennie F. Hurd, Edward M. Hurd, M. O. O'Donnell—all of Albany, N. Y.

Auto Ball Cock Co., August 11 (New Jersey), $125,000. Robert B. Barber and Jane Massey Barber, Hazelton, Pa.; William E. Massey and Mina R. Massey, 1001 Wesley avenue, Ocean City, N. J. Principal office, 421 Eighth street, Ocean City, N. J. To manufacture and deal in automatic plumbing supplies.

Chase National Import and Export Corporation, September 6 (New York), $5,000. George H. Warrin, 478 Marion street; Albert E. Baker, 552 Forty-seventh street, and Leon Dalrymple, 162 Lefferts place—all in Brooklyn, N. Y. Principal office, 25 Beaver street, New York City. To deal in South American products, rubber, etc.

Chemical Pump & Valve Co., August 11 (New Jersey), $30,000. Frank A. Warter and Emil Warter, Perth Amboy, and Fred Batzel, South Amboy—both in New Jersey. Principal office, 46 Commerce street, Perth Amboy, Middlesex County, N. J. To manufacture and deal in pumps, valves, and tanks.

Eagle-Picher Lead Co., September 2 (New Jersey), $10,000,000. William Wood, Thomas J. McCoy, Alfred Burdsal, William C. Wood, and John Ritterhoff. Principal office in State of New Jersey is at Blanchard street, Newark. To manufacture and deal in lead and zinc products.

Elastic Braid & Lace Co., August 11 (Massachusetts), $25,000. Charles M. Porter, 112 Boston avenue, Somerville; George Fickeissen, 63 Reynolds avenue, Chelsea, and William E. Waterhouse, 46 Lake avenue, Melrose—all in Massachusetts. Principal office, Boston, Massachusetts. To manufacture and deal in elastic braid, laces, braided fabrics and similar products.

Fero's Lexington Store, Inc., September 22 (New York), $10,000. James J. Fero, and William A. Miller, 792 Seventh avenue, and Alfred Hines, 1074 Lexington avenue—both in New York City. To deal in tires, auto supplies, etc.

Goodrich Auto Service Corporation, F. W., September 22 (New York), $75,000. Frank W. Goodrich, 312 East Fifty-eighth street; Peter V. Hoyt, 745 St. Nicholas avenue, and Henry W. Showers, 15 Wall street—all in New York City. Tire and auto service station.

M. & L. Auto Co., Inc., The, August 10 (New Jersey), $25,000. R. C. McIntosh (president and treasurer); Norman D. Laughlin (vice-president and secretary), and Silvia D. McIntosh (stockholder)—all of Plainfield, N. J. Principal office, 322 West Front street, Plainfield, N. J. To deal in automobiles, tires, oils and accessories.

Meyer Tire Duck Co., John H., September 11 (New Jersey), $300,000. John T. Neff and Rollin G. Neff, 26 Beach street, East Orange, N. J., and Samuel C. Steinhardt, New Rochelle, N. Y. Principal office, 26 Beach street, East Orange, N. J. To manufacture and deal in cotton and other fabrics.

Mutual Tire & Rubber Co., August 22 (Delaware), $1,000,000. E. E. Bishop, M. L. Gatchell, and I. M. Bristow—all of Wilmington, Delaware. Principal office, Corporation Registry Co., 900 Market street, Wilmington, Del. To manufacture and deal in tires for automobiles, motorcycles, bicycles, carriages, and vehicles of all kinds.

Newark Rubber Tire Co., Inc., September 6 (New Jersey), $10,000. Harry J. Martin, 67 Cabinet street; William F. Rothlisberger, 49 Osborne Terrace, and Joseph P. Dunn, 266 Halsey street—all in Newark, N. J. Principal office, Room 804, 810 Broad street, Newark, N. J. To deal in rubber tires, automobile supplies and accessories.

Northway & Christopher, Inc., September 14 (New York), $5,000. George S. Northway, John H. Burke and Daniel J. Seubert—all of Syracuse, N. Y. Principal office, Syracuse, N. Y. To manufacture and deal in rubber goods, tires, etc.

Para Co., The, August 19 (New Jersey), $10,000. Irving L. Wright, 918 Stuyvesant avenue; George W. Pearson, P. O. Box No. 444; S. Roy Heath, Fisher place, and Harold S. Maddock, 15 Atterbury avenue—all in Trenton, N. J. Principal office, 7 North Montgomery street, Trenton, N. J. To manufacture and deal in tires.

Peerless Tube Co., August 28 (New Jersey), $50,000. Charles O. Geyer, W. F. Harding, and Lewis H. Condit, Jr.—all of 70 Locust avenue, Bloomfield, N. J. G. H. Neidlinger (president), C. R. Pitt (treasurer). Principal office, 70 Locust avenue, Bloomfield, N. J. To manufacture and deal in cement tubes, etc.

Phineas Jones & Co., May 15 (New Jersey), $100,000. Henry P. Jones, Phineas Jones, and H. Percy Jones—all of 45 North Broad street, Newark, N. J. To manufacture and deal in tires, wheels, etc.

S. Schein & Sons, Inc., August 28 (New York), $20,000. Joseph S. Schein, 816 East 176th street; Jacob M. Zinaman and Avel B. Silverman, 51 Chambers street—both in New York City. To deal in rubber, gutta percha, balata, etc.

Sioux City Tire & Manufacturing Co., August 30 (Iowa), $220,000. C. F. Skirvin (president); John Nagle (treasurer), and Charles F. Sawyer (secretary)—all of Sioux City, Iowa. Principal office, 607-609 Trimble Block, Sioux City, Iowa. To manufacture rubber goods, automobile tires, etc.

Tire Company of California, Inc., September 20 (New York), $7,500. Sydney Bernheim, 35 Nassau street, New York City; Catherine A. Weldon, 591 Seventh street, and Harry H. Jacobson, 555 Grand street—both in Brooklyn, N. Y. To manufacture auto tires, etc.

Triple Tread Tire Co., August 10 (Illinois), $500,000. H. G. Lund (president), 4720 Dorchester avenue; M. Lund (secretary), 7219 South Park avenue, and Edward Grunich—all of Chicago, Illinois. Principal office, 1545 Michigan avenue, Chicago, Illinois. To manufacture and deal in tires, inner tubes, etc.

Vulcanized Rubber Co., June 20 (Maine), $1,500,000. Alfred F. Jones (president); T. L. Croteau (treasurer), and James E. Manter (clerk)—all of Portland, Maine. To manufacture and deal in crude rubber, lumber, merchandise, etc.

Washington Rubber Products Manufacturing Co., Inc., August 29 (New York), $5,000. Henry Siegel, Abraham S. Gussew and Alexander Meyer—all of 5 Beekman street, New York City. To manufacture rubber goods, especially bathing caps, folding bags, auto tops, etc.

BERLIN RUBBER CO. CHANGES ITS NAME.

By order of the council, the name of Berlin, Ontario, Canada, was changed to Kitchener, September 1. The Berlin Rubber Manufacturing Co., Limited, its leading industry, in accordance with the above change, has renamed the corporation, and is to be known hereafter as the Kitchener Rubber Manufacturing Co., Limited.

MAPLE LEAF TO BUILD.

Maple Leaf Tires, Limited, Toronto, Canada, has begun the erection of a new plant at Belleville, Ontario. The property was originally part of the Yeoman's estate and contains approximately 23 acres. The main building will be 281 feet long and the width throughout 62 feet, with two large extensions or wings to the northward making the total width 125 feet. Several subordinate buildings will also be constructed as speedily as possible. The factory will be equipped with the best modern machinery obtainable, every comfort for the workmen being considered. The approximate cost will be $100,000 and employment will be given at the start to about 100 hands. The company expects to manufacture 250 tires daily and many other rubber products, such as belting, garden and water hose, shoe soles and heels, rubber bottles, etc.

News of the American Rubber Trade.

BRIGHTON MILLS BUILDS NEW PLANT.

IN connection with plans for increasing its product, the Brighton Mills, Passaic, New Jersey, large manufacturer of tire fabrics for the rubber trade, has purchased about 300 acres of land at Allwood, New Jersey, which is within a mile of the present plant. Nearly 50 acres of this property, which is located on the Newark branch of the Erie Railroad, about midway between Newark and Paterson, will be reserved for factory purposes, and the balance will be developed into homes for the employes. Building operations have just started.

It is planned to increase the total output by approximately 30 per cent. The machinery to be installed was ordered months ago, and it is confidently expected that the new plant will begin turning out tire fabric in January.

John Nolan has been engaged to plan out the streets and landscape effects. Morris Knowles, of Pittsburgh, Pennsylvania, will supervise the sanitary installations. The John W. Ferguson Co., Paterson, New Jersey, will be the builders, and Murphy & Dana, of New York City, have been engaged as architects for the houses.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of shares of rubber manufacturing companies on September 25, are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois:

	Bid.	Asked.
Ajax Rubber Co. (new)	64½	65½
Firestone Tire & Rubber Co., common	1050	1080
Firestone Tire & Rubber Co., preferred	110	112
The B. F. Goodrich Co., common	72¼	72½
The B. F. Goodrich Co., preferred	112	114
Goodyear Tire & Rubber Co., common	270	290
Goodyear Tire & Rubber Co., preferred	106½	108½
Kelly-Springfield Tire Co., common	83	83½
Kelly-Springfield Tire Co., 1st preferred	98	100
Miller Rubber Co., common	250	275
Miller Rubber Co., preferred	104	106
Portage Rubber Co., common	160	170
Portage Rubber Co., preferred	160	170
Swinehart Tire & Rubber Co.	90	96
United States Rubber Co., common	59	59¼
United States Rubber Co., preferred	113	114

RUBBER COMPANY DIVIDENDS.

The Rubber Goods Manufacturing Co. paid its 70th regular quarterly dividend of 1¾ per cent on the preferred stock on September 15 to stockholders of record September 12.

A 2½ per cent dividend on common stock and a 1¾ per cent dividend on preferred stock has been declared by the Portage Rubber Co., the common stock dividend payable November 15 to stockholders of record November 3, and the dividend on preferred payable October 1 to stockholders of record September 20.

A quarterly dividend of 1½ per cent on the preferred stock of the Kelly-Springfield Tire Co. has been declared, payable October 2 to stockholders of record September 15.

PROPOSED FISK INCREASE.

Stockholders of the Fisk Rubber Co., Chicopee Falls, Massachusetts, have been called to meet on October 2 to vote on increasing the capital stock by $12,500,000. Of the new stock, $7,500,000 would be first preferred convertible, and $5,000,000 second preferred. At the same time the stockholders will vote on increasing the common stock by an amount sufficient to take care of the conversion of the present outstanding second preferred stock, and the proposed new preferred issues. The adjustment of Fisk stocks is to be completed by reducing the amount of the authorized capital stock by $5,000,000, the amount of second preferred stock, Series B, authorized a few months ago but not issued.

STANDARD TIRE COMPANY FORGES AHEAD.

C. P. SMITH.

Charles P. Smith, newly appointed sales manager of the Standard Tire & Rubber Manufacturing Co., Cleveland, Ohio, reports an increase in the company's business in the last six months of 650 per cent. The plant is running day and night, with three shifts, and enlargements are being made, and machinery and equipment ordered, which will give a capacity of about 600 tires daily. The Standard company has recently put on the market a new tire called the "Velvetread."

"RUB-HIDE" IN RUBBER.

A marked tendency in the compounding of india rubber today is a lessened use of inorganic and an increased use of organic fillers. While we hold no brief for the Henderson Rubber Co., Baltimore, Maryland, the notable increase in its business, as shown by the addition to the plant, would seem to prove that "Rub-Hide" was finding a place in the rubber trade. This substance, made from raw hide according to rubber manufacturers, possesses the following virtues: It adds notably to the tensile strength while giving practically the same elongation; it has no deteriorating effect, but rather is a preservative. That it stands the heat as in vulcanization is shown by the fact that it is used not only in soft rubber goods such as tires, inner tubes, and mechanicals, but in hard rubber as well. From 25 to 33 per cent is used in ordinary compounding.

WATER-CURED RUBBER GOODS.

The S. & W. Rubber Manufacturing Co., College Point, New York, is about to put on the market a new line of inner tubes, called "Velvet Water Cured" tubes. These goods will be, as the trade-mark indicates, cured in hot water; they will be produced in two colors, gray and non-blooming bright red.

Water-curing is not new, as quantities of hard rubber goods are thus cured. As far as soft rubber goes, the process is rarely used and certain mechanical difficulties being overcome, offers advantages—for example, water-cured goods are not likely to be overcured or "burned."

The company is also about to put on the market, tire casings, dress shields, elastic bands, bathing caps, jar rings, packing, etc., all water-cured.

The process is a product of the veteran inventor and experimenter in rubber goods, Arthur C. Squires.

PERSONAL MENTION.

Colonel Samuel P. Colt, president of the United States Rubber Co., New York City, has returned from an extended motor trip which included visits to the Canadian plants affiliated with the company.

The Pan American Society of the United States held a largely attended informal luncheon on September 11 in honor of His Excellency, Dr. Lauro Severiano Müller, Minister of Foreign Relations of Brazil, who sailed the next day for South America.

Frank Poel, formerly of the crude rubber importing firm of Poel & Arnold, returned from Europe the middle of last month.

José Simao Da Costa, of Rio de Janeiro, Brazil, inventor of the Da Costa coagulating machine, is now visiting in New York City.

H. Stuart Hotchkiss, vice-president of the General Rubber Co., New York City, who is now in Sumatra, is expected to return next month.

Raymond B. Price, vice-president of the United States Rubber Co., who is at present in Europe, is expected to arrive home in November.

George Wilson has been appointed transportation manager of the Dominion Rubber System, with headquarters at the Canadian Consolidated Rubber Co., Limited, Montreal, Canada.

David S. Shearman, president of the Oldtown Rubber Co., Xenia, Ohio, is an heir of the estate of Mrs. Hetty Green, being a direct descendant of Sylvia Ann Howland, Mrs. Green's aunt, who left a trust fund of about $2,500,000. Mr. Shearman and his five brothers will receive the share from the Howland estate, which would have been the portion of their father, who died in 1895.

Charles H. Roth, formerly vice-president and sales manager of the American Tire & Rubber Co., has been engaged as sales manager of the newly organized Iowa Rubber Tire Co., Bettendorf, Iowa.

Arthur Jackson Wills, whose portrait and biographical sketch appeared in the September 1 INDIA RUBBER WORLD, writes that a misstatement appeared therein, as he is not a graduate of Stevens Institute of Technology, although he attended that institution.

Harry L. Miller has been made manager of the Fisk Co. of Texas, at San Antonio, Texas, and was also elected secretary and a director of the company.

W. M. Doucette succeeds E. P. White as manager of the New York City branch of the Portage Rubber Co., at 1924 Broadway.

Clarence R. Bollinger has been appointed an adjuster of the Goodyear Tire & Rubber Co., Akron, Ohio, and will take charge of that department in the Goodyear branch at Buenos Aires, Argentina.

G. B. Overeynder, Rotterdam, Holland, managing director Surinam Balata Co., passed through New York last week on his way to Paramaribo, British Guiana.

G. A. PIRELLI IN NEW YORK.

G. A. Pirelli, of the well-known firm of Pirelli & Co., Milan, Italy, was in New York last month on business for his company. He reports unprecedented activity in the various plants controlled by the Pirelli interests, due to the large government and domestic orders. Building extensions and new plants are being erected to meet the requirements of the increasing business.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

NEW "USRUBCO" PURCHASING AGENT.

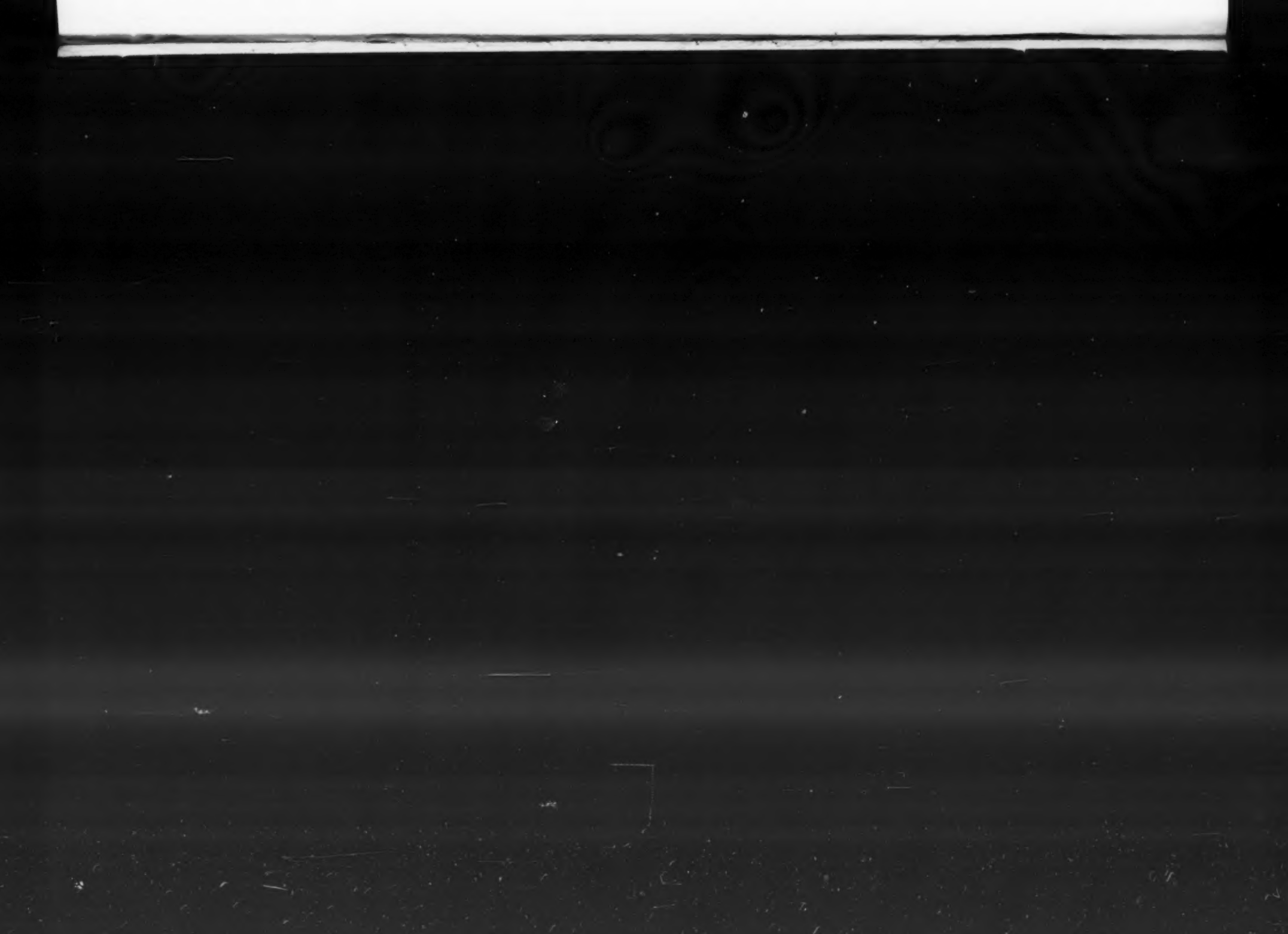
RAYMOND S. WILLIS, who has just been appointed purchasing agent of the United States Rubber Co., New York City, brings to this position a broad and varied business experience. He was a member of the class of 1898 in the Massachusetts Institute of Technology. On leaving this institution at the end of his junior year, he went ranching in Texas, Arizona and New Mexico. In 1900 he went to Mexico, where he became interested in rubber. From 1908 to 1910 he was connected in an executive capacity with the National Paper & Type Co.'s office in Mexico City. In 1911 Mr. Willis became secretary and purchasing agent in Barcelona, Spain, for the Barcelona Traction, Light & Power Co. This work was under the direction of the Pearson Engineering Corporation, Limited, New York City, which had previously built street railways in Mexico City and Rio Janeiro, and had charge of the engineering work of the Mexico Northwestern Railroad. Naturally, in connection with a project of this size, Mr. Willis had many invaluable experiences, and his work as purchasing agent in Spain opened his eyes to the possibilities afforded by the war for the extension of American markets. Consequently Mr. Willis resigned from the Barcelona Traction, Light & Power Co. to open his own export office in New York City.

RAYMOND S. WILLIS.

Mr. Willis has been remarkably successful here and still retains an interest in the export business, although his entire time in the future will be devoted to his duties as purchasing agent for the United States Rubber Co.

SON OF A RUBBER ENGINEER.

Joseph A. Dennison, who, with his wife was lost in the mountain wilderness of New Hampshire, and rescued in an exhausted condition by a search party, was the son of John Dennison, for many years engineer at the works of the Tyer Rubber Co., Andover, Massachusetts. Several of the old engineer's children, too, found employment in the factory, while they were building up the family fortunes and getting the wherewithal to pay for their education. Joseph A. Dennison is a prominent and successful lawyer, a self-made man. After attending the public schools and Phillips Academy in Andover, he went to Dartmouth College, but left to take up newspaper work in Boston, Massachusetts, meanwhile studying law, and later graduating from Boston University Law School. He was Assistant District Attorney in Boston in 1905-1906, resigning in the latter year and resuming his law practice. Both Mr. and Mrs. Dennison are recuperating from the exhaustion caused by exposure and hunger during their wanderings in the trackless forest. A somewhat pathetic incident connected with this misadventure was the detention in Concord, New Hampshire, several days afterward of two Massachusetts boys who ran away from home to search for the Dennisons, hoping to secure the reward offered. They had not heard of the rescue of the missing couple.



TRADE NOTES.

Concerning the item of news of the Wilson Rubber Co., Canton, Ohio, which appeared in the September issue of THE INDIA RUBBER WORLD, it should be noted that the Wilson company has leased the plant formerly occupied by the Canton Manufacturing Co., and not that of the Canton Rubber Co., as was stated in the above mentioned paragraph. The Canton Rubber Co. is still located in the same factory building in Canton as heretofore, and is in no way connected with the Wilson Rubber Co.

The Republic Rubber Co., Youngstown, Ohio, is planning for additions which will include one new building and the remodeling of one of the existing buildings. Mills, calenders, boilers and various machinery will also be added, which will more than double the company's capacity in its pneumatic tire department, as well as considerably increase its capacity in other departments.

William H. Stiles, crude rubber importer and broker, has removed his office to 79-85 Wall street, New York City.

A. G. Spalding & Bros., manufacturers of sporting goods, have removed to the six-story building at 523 Fifth avenue, New York City, which has been completely remodeled to fill the requirements of their business.

The Falls Rubber Co., Cuyahoga Falls, Ohio, has removed its Cleveland, Ohio, branch from 2001 to 1844 Euclid avenue.

Among the wide range of exhibits at the Canadian National Exhibition at Toronto was that of the Dunlop Tire & Rubber Goods Co., Limited, showing an extensive line of mechanical goods and an interesting presentation of its popular rubber heels. Gutta Percha & Rubber, Limited, also made a creditable showing of military rubbers, lumbermen's rubber boots, leather tops, plain overs, croquets, tennis and sporting shoes and other offerings in the rubber footwear line.

The New York City office of the Boomer & Boschert Press Co. is now located at 25 West Broadway, Room 27.

H. B. Niblette, manager of the New York City branch of the Rubber Products Co., Barberton, Ohio, announces that this office is now settled at its new location, 148 West Sixty-eighth street, just west of Broadway.

The Electric Hose & Rubber Co., Wilmington, Delaware, will shortly erect a new one-story machine shop, 40 by 100 feet, to cost about $11,000.

The Lycoming Rubber Co., Lycoming, Pennsylvania, employs more than 500 persons, and now has a daily capacity of 5,000 pairs of rubber shoes.

The new steel and concrete building of the National Rubber Co., Pottstown, Pennsylvania, is practically completed. The company recently declared its first quarterly dividend of 2 per cent.

A certificate of increase in the capital stock of the Stungo Radium Rubber Co., Pittsburgh, Pennsylvania, has been filed with the State Department at Dover, Delaware, increasing the capital from $1,000,000 to $3,000,000.

W. H. Jones, Southern selling agent for the United States Rubber Co., with headquarters at Baltimore, Maryland, was recently elected temporary chairman of the branch organization of The Rubber Club of America, Inc., lately effected at a meeting held at the Hotel Belvedere, Baltimore.

The net earnings of the United States Rubber Co., New York City, for six months, from January 1 to June 30, 1916, after deducting all interest charges, were $4,920,649.80.

It is stated that an eastern syndicate has arranged to take over a large ranch in the vicinity of Redlands, California, for the planting of guayule and the erection of a factory for extraction of the rubber from the plant. The proposed enterprise will require an outlay of about $1,000,000 and the employment of at least a thousand men. It is said that about 70 beds or 2,000,000 plants have already been set out.

On account of the high prices of materials, the shoe repairers in various parts of Canada have formed local associations in the larger cities of Canada for the purpose of establishing uniform rates for repair work. It is noted that in St. Catherines, soling men's rubber boots is priced at $1.85, while in Welland $1.50 is charged for similar repair. Attaching rubber heels on men's boots is established at 50 cents (including cost of the heels) in all of the various cities, but for women's rubber heels, attached, the charges vary from 40 to 50 cents in the different localities.

The board of directors of the Kelly-Springfield Tire Co., New York City, has decided to retire from the retail field in that city, and is notifying its patrons of the names of dealers and distributors of its tires to whom retail orders should be given. The company states that if a customer desires to have his requirements filled direct, the orders will be executed, but the invoice covering the goods delivered will be mailed from one of the jobbing houses.

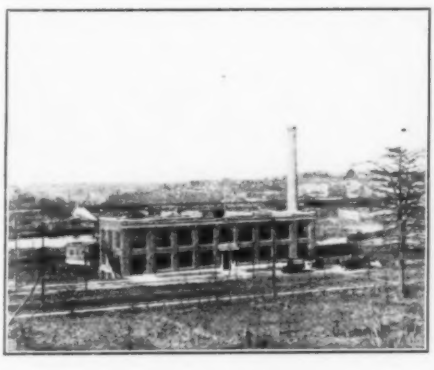
ROYAL CORD TIRES HOLD BOTH TRANS-CONTINENTAL RECORDS.

Last month a new record of 5 days 3 hours and 31 minutes from San Francisco to New York was made by a car equipped with Royal Cord tires manufactured by the United States Tire Co. This breaks the world's record by 14 hours and 59 minutes. The men who drove the car in relays reported that they experienced no tire trouble whatever.

Not satisfied with this remarkable record, a return trip was immediately arranged for and made in 5 days 17 hours and 23 minutes, breaking all previous records from New York to San Francisco.

THE GRYPHON RUBBER & TIRE CORPORATION.

The Gryphon Rubber & Tire Corporation is now located in its commodious new factory overlooking the Harlem River a Kingsbridge, New York, on the line of the New York Central Railroad. This location is admirable with respect to cheap electric power, suitable housing for labor, shipping facilities, and convenience to the market for raw material as well as for the sale and distribution of products. The company expects to begin the manufacture of tires about the first of November, and modern equipment is being installed which will allow for an output of 400 completed tires—shoes and inner tubes—per day. The president is Joseph W. Jones, a prominent engineer and manufacturer of wide experience, and the general manager, A. E. Gordon, has had over 15 years' experience in the manufacture of tires and other rubber goods.



GOODRICH BRANCH CHANGES.

W. W. Ledger has been made local manager of the branch of The B. F. Goodrich Co. at San Diego, California.

William J. Schwan is now manager of the service station at Yosemite, California. This station is to be classed as a tire depot.

H. W. L. Kidder has been appointed local manager at the Columbus, Ohio, depot of the Goodrich company.

A. H. Willett has succeeded R. Hasler as manager at New Orleans, Louisiana.

The Phoenix, Arizona, branch is now located at the corner of First and Monroe streets.

PERFECTION TIRE & RUBBER CO.

It is reported that the Perfection Tire & Rubber Co., with offices in the Marquette Building, Chicago, and factories at Fort Madison, Iowa, and Wabash, Indiana, has purchased a large tract of land in the Factoria district of Fort Madison for the erection of 100 houses for the use of the company's employes. Five thousand dollars has been deposited with a local bank as a guarantee of good faith.

On September 1 a change in officers of this company went into effect, and they are now as follows: C. R. Cole, president; R. J. Evans, vice-president; E. A. Stickelman, treasurer, and C. W. Harris, secretary.

Charles C. Gehring, formerly manager of the Pittsburgh branch of the United States Tire Co., has been transferred to the Cleveland, Ohio, branch, where he will act in the same capacity.

PENNSYLVANIA RUBBER CO. CONVENTION.

At the recent convention of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, managers of 14 branches, including such distant points as San Francisco, California, and Seattle, Washington, gathered together at the home plant. Important problems of the coming season were taken up and discussed with the greatest interest, and announcements were made concerning the New Bar Circle automobile tire, shown herewith, and a new bicycle tire similar in style of tread, and also called the Bar Circle.

Two of the meetings were held at the Greensburg Country Club, where luncheon was provided, and opportunity afforded the visiting managers to play golf. The social features of the conference were exceptionally pleasant, including a reception at the home of Seneca C. Lewis, general manager of the Pennsylvania company, a chicken and waffle dinner at Si Poole's Farm, and a lamb roast and picnic at Immel's Reservoir.

The new slogan adopted by the company is "Eight Million Dollar Sales in 1917." The August sales of the company were the most satisfactory in its history, reaching over the half million dollar mark.

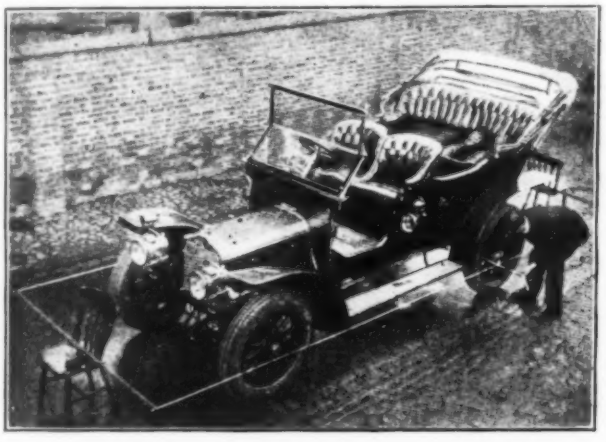
BOONE TIRE & RUBBER CO. TO BUILD.

The Boone Tire & Rubber Co. will shortly erect a plant at Belvidere, Illinois, containing 25,000 square feet of floor space. The buildings will be U-shaped in plan. The dimensions of the main building will be 50 by 180 feet, with two wings, 60 by 120 feet. The initial plant will have a capacity of 150 casings per day, and a full line line of mills, calenders, and mold and heater equipment will be installed to handle this number of tires. I. V. Maclean, formerly president and general manager of the Hawkeye Tire Co., is president of the Boone company.

A SIMPLE METHOD OF ALIGNING MOTOR CAR WHEELS.*

UNDULY rapid wear of tires is in almost every case due to disalignment of the wheels. This results in greatly reducing the normal mileage, even though wheels are only slightly out of parallel. To detect this defect and properly correct it requires something more reliable than the eye, but nothing very elaborate is called for.

The illustration shows a very simple and practical method. Two strips of wood about 7 feet long are placed together and a small hole is then bored in the ends of both strips at the same time. Two pieces of twine must be cut in exactly equal



lengths (about 15 feet each) and the ends passed through the holes in the strips and knotted, care being taken that the two lengths of twine are still equal. Two ordinary kitchen chairs are then placed, one in front and the other at the rear of the car, with their backs toward the vehicle. Each chair serves to support one of the wood strips and the two lines of twine are stretched on either side of the car parallel to each other. The lines being roughly in position, adjust one of the wood strips by sliding it on the chair until one of the rear wheels and its corresponding line is found to be exactly parallel, fore-and-aft, by measuring the distance between the twine line and the rim. Then bring the front wheel on the same side of the car into alignment with the twine, without disturbing the first rear wheel, which is easily done if the front wheels are jacked up.

If the four measurements are the same, the wheels "track" perfectly. However, a slight variation between the front and rear wheels is permissible, but the measurements fore-and-aft of each wheel must be equal. Similar measurements are then taken of the second rear wheel on the opposite side of the car and the remaining front wheel is measured in the same way as previously described.

CORRECTION.

Owing to a clerical error in rearrangement of the list of the Rubber Trade Preparedness Committee, in the September 1 issue, the name of the Continental Rubber Co. of New York was omitted, President G. H. Carnahan's name being credited to another corporation with a somewhat similar title.

*From an article By the Palmer Tire Co., Limited, London, England.

TRADE NOTES.

The Pennsylvania Rubber Co., Jeannette, Pennsylvania, has sent to the trade an announcement, effective Octover 1, of a reduction in the prices of its Vacuum Cup, Ebony Tread and Bar Circle tires, claiming that, notwithstanding the present high average level in the raw material market, the growing demand for its tires has enabled the company to effect substantial savings in cost, in which it permits its customers to share.

The United States Rubber Co., New York City, received the only prize offered for tires at the Exposition Nacional de Panama, held in the city of Panama in the spring to commemorate the discovery of the Pacific ocean by Balboa. This award was in the form of a diploma and gold medal, which have been recently received by the company.

Under the direction of H. H. Replogle, manager of sales, the sales organization of the Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio, held a convention at the home plant during the week of September 11. The conference was devoted to important matters of sales business, particularly items pertaining to taking care of the increased business of the company, which has practically doubled during the last 12 months. The management was much impressed with the enthusiasm and loyalty of the sales staff, and it is planned to hold similar conferences annually.

The Hawkeye Tire & Rubber Co., Des Moines, Iowa, is now operating in all departments. Charles A. Besaw, president of the Quality Rubber Co., Hartsville, Ohio, is the consulting chemist.

The Tire Reconstruction & Supply Co., Inc., New York City, has increased its capital stock from $25,000 to $75,000. This company is the exclusive Eastern distributer of the "Reliable" tire. A service station is maintained at 685 Eleventh avenue for repairing of all kinds of tires and tubes, especially for the trade, and the reconstruction of old tires, which are guaranteed for 3,000 miles at approximately one-half the cost of a new tire.

The Lion Tire & Rubber Corporation, which some months ago acquired the H. J. Heinz Co. factory at Lafayette, Indiana, will shortly commence operation.

H. J. Succop has been placed in charge of the Oklahoma branch of the Atlas Tire Co., New York City, tire jobbers and retailers. Mr. Succop has been in the tire business for seven years, starting with The B. F. Goodrich Co., and prior to his connection with the Atlas company was manager of the Knight Tire Co. at Pittsburgh, Pennsylvania. He reports that the Atlas company has almost doubled its business this year, and is about to open five more branches.

The Walters Rubber Co. of New York, Inc., distributer of the product of The Federal Rubber Co., Cudahy, Wisconsin, and "Walters" red tube, contemplates opening a tire storehouse at Mineola, Long Island, from which prompt delivery may be made. H. S. Walters, secretary and treasurer of the company, was previously connected with the United States Rubber Co., and the Federal company.

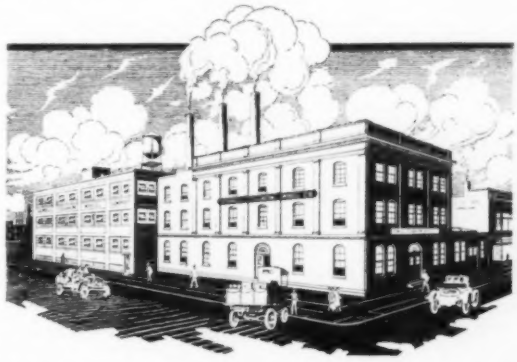
John McTaggart, an automobile engineer of Philadelphia, Pennsylvania, has invented an inner tube said to be practically impervious to puncture. The inventor decreased the air chamber 22 per cent and introduced a flexible steel mesh into its construction, producing a tube which has withstood remarkable tests.

Indiana has a new rubber enterprise in prospect in the Alpha Rubber Manufacturing Corporation, notice of whose incorporation appeared in the August issue of THE INDIA RUBBER WORLD. Fifty thousand dollars of the authorized capital of $1,000,000 has been disposed of, and $75,000 is about to be issued to pay for a plant in Indiana. The new company expects to manufacture tires as well as reclaim rubber.

It is expected that the new factory of the Brunswick-Balke-Collender Co. at Muskegon, Michigan, will be completed within two months' time. The plant occupies 40,000 square feet of floor space and will cost between $40,000 and $50,000. In order to provide for the increase in the number of its employes, the company has also contracted for the erection of at least 24 double dwellings, to be occupied only by its own workers.

SEWELL CUSHION WHEEL CO. EXPANDS.

The Sewell Cushion Wheel Co., Detroit, Michigan, is enlarging all facilities to allow for an increased output of its product—a wood and steel wheel with a soft rubber cushion between the inner wheel and outer felly. Ample precautions are being taken to guard against shortage of material, the new addition increas-



ing the floor space fourfold and enabling the company to carry a large reserve stock of rubber cushions, wood and steel, and at the same time to greatly increase production, the sales so far this year showing more than 100 per cent increase over the same period last year.

The new building is of reinforced concrete and steel construction, 71 by 74 feet in dimensions, three stories and basement, and is located at the rear of the company's property at the corner of Gratiot and Beaufait avenues. The executive offices, private offices of officials, and a large general office and reception room will occupy the second floor, the remaining space on this floor to be used for manufacturing the wooden part of the wheels. The entire first floor will be used for a machine shop, assembling departments and a fireproof vault for valuable papers, etc., a large vault for storing rubber having been provided in the basement. Careful attention has been paid to all details affecting the health and comfort of employes, and every modern convenience, including several sanitary drinking fountains on each floor, will be supplied.

THE ALLIANCE RUBBER CO. REINCORPORATES.

The reorganization of the Alliance Rubber Co., decided upon at a stockholders' meeting on August 24, will include reincorporation under the name of the Alliance Tire & Rubber Co. Stockholders will receive preferred stock at par and a 20 per cent stock dividend payable in common stock of the new company, also having first call on the securities offered to the general public. The factory management will remain the same as it has been since the business was begun.

The Alliance company has been unable to take care of all the business that came its way during the past year and the extra capital will be used for the enlargement of the factory, including a three-story structure closely resembling the original plant; the installation of additional mills, calenders, vulcanizers, molds, cores, etc., and the purchase of crude rubber and fabrics in larger quantity than has heretofore been possible.

The Obituary Record.

PIONEER IN THE GUAYULE INDUSTRY.

FRANCISCO MADERO, father of the late President Madero of Mexico, and one of the first to develop the guayule industry, died at his residence in New York city, September 3, aged 67 years. He was born on March 11, 1849, at Rio Grande, in the State of Coahuila, and was educated in Belgium, graduating from college there with high honors. His grandfather, Francisco Madero, owned nearly a million acres of land in Texas, but at the time of the war between Mexico and the United States, the family fled to Mexico, where, with his son, Evaristo, he settled at Rio Grande. Later the family moved to Parras, Coahuila, where Evaristo and Francisco, his eldest son, assisted materially in building up a new fortune. They bought a large acreage of land at Parras, established cotton mills and planted extensive vineyards, manufacturing cloth, raising wheat and making wine. Later, Francisco acquired a cotton plantation to supply cotton for the mills.

FRANCISCO MADERO.

When it was discovered that guayule was a rubber producer, Francisco, his brother, Gustavo, and an American college friend, were among the first to appreciate the value of the discovery, and they at once instituted a factory at Parras for the extraction of the gum. They afterwards built factories at several points in Mexico, the family acquiring more than 2,000,000 acres, or more than 4,000 square miles, where the guayule plant grew wild. Francisco owned, personally, the works at Cuatro Cienegas in Coahuila, the principal factories belonging jointly to himself and other members of the family being the "Compania Explotadora Coahuilense, S. A." at Parras, and the "Compania Ganadera de la Merced, S. A." at Cuatros Cienegas. These plants were fully equipped for the extraction of the gum. In 1908 the eight factories were producing 350 tons a month, and an immense business was being done up to the time of the recent internecine war in Mexico, during which his son, Francisco I. Madero, then president of the Republic, and another son, Gustavo, were assassinated in February, 1913. The family fled to this country, and have resided in New York City ever since. The entire Madero property was confiscated about a year ago, but a month ago was returned to the family by the present *de facto* government.

The deceased was a typical representative of the high-class Mexican family—a wide-awake, enterprising business man, and a polished gentleman. He attained to the thirty-third degree in Masonry. He was fond of searching out deserving, talented young men, and paying for their education. Since his death many acts of charity hitherto unknown even by his family have come to light through letters of condolence. He was highly honored in his own country and had many friends there, as well as a wide circle in New York City.

Francisco Madero married Miss Mercedes Gonzales Treviño, of Monterey, Mexico, who survives him. They had seven sons and four daughters, all of whom are now living except the two above mentioned.

AN EFFICIENT YOUNG OFFICIAL.

PAUL SCHMIDT, secretary of the Rubber & Guayule Agency, Inc., New York City, died at the Englewood Hospital, Englewood, New Jersey, on his 29th birthday, after many months of suffering. Mr. Schmidt was born in Hamburg, Germany, September 13, 1887, and received his education in the public schools of that city. On graduating he entered the office of Weber & Schaer in Hamburg and for ten years occupied steadily advancing positions in the rubber department of that concern. Three years ago he came to New York City and entered the employ of the Rubber & Guayule Agency, Inc., of which he became secretary and a director.

PAUL SCHMIDT.

Early in the present year Mr. Schmidt made a trip to Mexico in behalf of the company, remaining there about two months, during which time he evidently contracted a serious malady which was undoubtedly the ultimate cause of his death. After his return to New York he was operated on for appendicitis, and on account of his weak condition he suffered a relapse, causing his death on the date mentioned.

Mr. Schmidt was engaged to be married to an estimable young lady in Hamburg but, because of the war and also on account of his sickness, the wedding had been postponed until November of this year. He was a young man of unusual ability and promise and his early demise is the cause of profound regret, not only to his business associates but also to a wide circle of friends and acquaintances which he made during his residence in this country.

ROBERT J. BOWES.

Robert J. Bowes, for 27 years connected with the Lawrence Felting Co., of Millville, Massachusetts, and one of the best known mill men in Southern New England, died at his home in Millville, on September 11, from heart and kidney complications brought on by chronic rheumatism. He was born in Lawrence, Massachusetts, July 16, 1871, and moved to Millville with his parents in 1877, and had lived there ever since. He was educated in the public schools in Millville and Blackstone, Massa-

chusetts, and graduated from the Woonsocket high school, at Woonsocket, Rhode Island.

Following his graduation he entered the Lawrence Felting Co. with his father, the late William J. Bowes, who was the founder of the plant and for years its manager. Upon the death of his father, Mr. Bowes assumed management of the business and continued in charge for some time after the United States Rubber Co. acquired it, remaining until July 1, 1915, when, after 27 years' service, he resigned on account of poor health.

During the past summer Mr. Bowes spent much of his time at his summer home at Pleasant View, near Narragansett Pier. About the first of September he experienced a change for the worse and later returned to Millville, where he had another sinking spell and gradually grew worse until death came. He was a member of Millville Lodge, United Workmen, and Woonsocket Lodge of Elks. He is survived by his wife and two daughters, his mother, three brothers and two sisters.

LIEUTENANT ROBINSON.

President W. H. Robinson, of the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, has the sympathy of his hosts of friends in the trade in the recent loss of his son, F. Reginald Robinson, who was killed in action on August 19. When the 73rd Royal Highlanders of Canada was organized, he was among the first to join, and afterwards qualified as a lieutenant. His battalion went to England early this spring, and he had been only one week at the front when death overtook him.

A VETERAN BOOTMAKER.

Otis York, one of the oldest employes, as well as one longest in service, in the Boston Rubber Shoe Co.'s Fells factory at Malden, Massachusetts, dropped dead of heart disease at the door of his home in that city on September 13. He was 66 years old.

HIS SON WELL KNOWN IN THE TRADE.

James L. Locke, father of Colonel Frank L. Locke, for many years superintendent of the Boston Rubber Shoe Co., died at the home of a nephew in Chichester, New Hampshire, aged 84 years. He is survived by two sons and two daughters.

S. SCHEIN & SONS, INC.

The New York and London headquarters of S. Schein & Sons, Inc., dealers in crude and scrap rubber, are in process of enlargement. The New York City branch was opened about a year ago at 140 Nassau street, and warehouse facilities being found necessary to care for the expansion of the company's American business, a six-story building was secured at 30 City Hall Place, where alterations and improvements are now being made. The European headquarters have been transferred from Finsbury street, London, to 66-70 Lawrence Road, Tottenham, England. This new plant has a frontage of 240 feet and a depth of 230 feet, and consists of five buildings, completely equipped for the expeditious handling and grading of rubber material in crude, scrap, finished or semi-finished state. Simon Schein and his son, Stanley, are in charge of the business at Tottenham, the New York plant being under the supervision of Joseph and Maurice Schein.

The manufacturers of toys in Canada formed an association last March to foster the production and marketing of Canadian made toys in the Dominion. The rubber toy industry is appropriately recognized by the choice of J. A. Wade, of the Canadian Consolidated Rubber Co., Montreal, as vice-president.

Poor Packing of Pontianak.

Rubber manufacturers have often complained of the bad shape in which rubber arrives, particularly when it comes from a distance. The accompanying illustration shows a shipment of Pontianak just as it was unloaded at Bush Terminal Docks, Brooklyn, New York. The picture is so graphic that further comment is unnecessary.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

A STATISTICAL report for the state industrial commission reveals the fact that during 1915 the rubber companies in Summit County, Ohio, practically all of which are in Akron, paid $21,733,088 in wages and salaries. This is 61.1 per cent of the total payroll of the county, and is far in the lead, the second largest being that of the foundries and machine shops, with only $2,495,120.

Although hundreds of new homes have been built in Akron during the past summer, the housing problem is still unsolved. Many changes at the factories are due to the fact that men come here to work, expecting to bring on their families, and when, after six months' time they are unable to find a house for rent, return where they came from because they cannot afford to maintain their families in other cities. Officials of The B. F. Goodrich Co. and other concerns employing thousands of men are now working on plans to meet this growing need. A plan similar to the farm credits system, where the men would eventually become home owners, has been proposed. This, it is urged, would not only insure permanent growth, but would induce workmen to save.

The Goodyear Tire & Rubber Co. has solved the housing problem for its employes by building houses on the easy payment plan. An addition of 350 acres has just been made to Goodyear Heights, a tract of land laid out for workmen in the plant of the company. On this land employes can build their own homes on the basis of rent, without any large first payment.

Activities of Akron's building and loan associations will be made clear to citizens who do not fully appreciate their work when the Ohio Building and Loan Association meets in Akron October 11-12, in its annual convention. All visitors to the city will be given rubber badges made in elaborate designs. When this association was organized there was no state control of the funds of building and loan associations, and through its efforts a bill was passed submitting all such institutions to state examination so the interests of their patrons would be safeguarded.

* * *

It is reported that the Kelly-Springfield Tire Co. has decided to change its location to Cumberland, Maryland. It is understood that the authorities of that city have offered very large cash and land inducements, involving $750,000 and 75 acres of eligibly located land for a factory site.

* * *

It was proposed at the meeting of the Firestone Tire & Rubber Co., held September 30, that the capital stock shall be increased from $4,000,000 to $50,000,000, of which $40,000,000 is to be common and the balance preferred. Present holders of $1,000,000 preferred stock have been notified that the entire issue will be redeemed at 110, November 1. It is also the present intention to declare a 700 or 800 per cent dividend on the common stock. The full report of this meeting will be published in the next issue.

* * *

The track team of The B. F. Goodrich Co. won the one-mile relay race and the Police Trophy cup at the Police Field Meet held at Cleveland, Ohio, last month. The Akron team walked away with all the honors from Cleveland's best factory athletes. They won first and second in the mile, second in the 220-yard dash, second in the quarter, third in the high jump, and first and second in the half-mile, or a total of 36 points, 19 points more than the Hydraulic Pressed Steel Co. team, which was second in the meet.

* * *

Present building operations of the Goodyear Tire & Rubber Co. include more room for the office force as well as the factory workers and will provide a much larger capacity both for tires and mechanical goods, one new building now nearing completion being devoted exclusively to the manufacture of mechanical goods. To provide for the constant flow of electric power and at the same time conserve the water supply which rotates the 10,000 K. V. A. turbine at the plant of the Goodyear company, a battery of five cooling towers is being erected.

At the Goodyear field and track meet held on Labor Day at Seiberling Park, more than 1,000 persons competed for supremacy in the various sports. The field was resplendent with the Goodyear colors, orange and black, and large American flags, and the carnival opened with a baseball game between the Akron and Boston Goodyear teams, won by the home team. While this was in progress, boxing and wrestling events were conducted in two separate rings. Races of every kind and description followed, as well as fancy diving, quoits, tennis, bait casting, nail driving, trap shooting, cock fights, clock golf and greased pig chases.

Woodson Reese, for the past two years manager of the Goodyear branch at Philadelphia, Pennsylvania, has been transferred to Akron as special factory representative.

* * *

The Denmead Rubber Co. will locate on the Denmead property in East Akron. Nearly three acres of land compose this property, which has the finest water privileges in the state, the Little Cuyahoga River passing through a part of it.

The Denmead company will take over from the Denmead Tire & Supply Co. the manufacture of rubber heels and soles and also the good will of the latter company.

* * *

The capital stock of the Star Rubber Co. has been increased from $200,000 to $400,000.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

FALL trade opens well in most lines of rubber business. In mechanicals the report is that the call for rubber belting is greater than a year ago, a fact that has been attributed to the great increase in cost of leather belting, material for which is fully double its normal price. But two leading leather belting manufacturers have told your correspondent that the demand for their product is up to the average, despite the high prices, so that the increased demand for rubber belting must be credited to a larger general demand for all kinds of belting, or to a conversion of users to a preference for that made of rubber.

* * *

There is a very general satisfaction shown by the trade that the new tennis footwear price lists, which appeared early last month, showed but a moderate increase over the figures of last year. The higher cost of cotton duck amply justifies the advance in footwear made from this material.

* * *

Speaking of cotton duck brings to mind that the steady increase in the use of automobiles, and the consequent present and prospective demand for tires, is a matter which is being given most serious consideration in the textile industry of New England. The production of fabrics suitable for the manufacture of tires has hitherto kept pace with the demand, but that it will continue to do so is an open question, for two reasons. One of these is the possible lack of supply of suitable raw material, and the other, the insufficient productive capacity of the factories equipped to make such fabrics. Of these mills, many are situated in this section, and are largely financed by Boston capital.

Many of the leading concerns, which specialize in auto-tire fabrics, have increased their capacity for such fabrics, while others have made preparations for doing so, but here they are finding a new difficulty, the inability of loom manufacturers to fill their orders promptly because of the increased demand. Among the most important of these enlargements is the building of the American Tire Fabric Co.'s factory at Newburyport by Boston and New York interests, in which a capital stock of $1,500,000 is authorized by its charter. Another is the erection of another factory at the plant of the Manomet Mills at New Bedford, for which additional stock to the amount of $1,000,000 has been issued. The Manhasset Manufacturing Co., of Putnam, Connecticut, is planning to nearly double its output of yarn for tire fabrics, and the Killingly (Connecticut) Manufacturing Co. has quadrupled its product of tire duck within the last two years, and it is reported, contemplates the erection of a yarn mill to supply the increased demands of its looms. The Atlas Yarn Co. has acquired a mill at Southbridge, Massachusetts, and is producing yarns specially for tire fabrics. Mention was made recently in your columns of the increase in capital of the Connecticut Mills Co. and the acquisition of the Nemasket Mill at Taunton, this state, where it will manufacture about one-half the yarn required for its weaving at Danielson, Connecticut. The West Boylston Co.'s factory at Easthampton, Massachusetts, is running to its utmost capacity on yarns and auto-tire duck. The Bay State Cotton Corporation, which completed a $100,000 addition to its plant at Lowell about the first of the year, is now running exclusively on tire duck. The Katama Mills at Lawrence is a $500,000 enterprise for manufacturing tire fabric.

Thus it will be seen that New England is fully alive to the importance of supplying proper fabrics for the production of automobile tires, and that large amounts of Boston capital are invested in this industry. Indeed, there is much Boston money in many similar enterprises outside of New England. But that is another story.

* * *

The Apsley Rubber Co. is doing some active advertising in New England. The writer visited Eastport, Maine, last month, and was surprised to note, on landing, that practically two-thirds of the people were wearing little celluloid flag pins bearing the Apsley trade-mark. A "fish fair" was in progress, which had all the earmarks of a county fair. The Apsley Rubber Co. had a working exhibit, two expert workers making rubber footwear, supplementing which was a full line of the Apsley specialties in boots, shoes and tennis lines. The "Rock Hill" boots made by this company are very popular with fishermen along the coast of Maine and as far as the Grand Banks, and at a drawing, bearing some resemblance to a lottery, the second and third prizes were a pair of these fishermen's boots and a pair of ladies' rubbers. Naturally the Apsley footwear got pretty extensive publicity in connection with this fair.

* * *

The Mishawaka Woolen Manufacturing Co., Mishawaka, Indiana, also had an exhibit at the Eastport Fish Fair, showing a full line of their "Ball Band" boots and rubbers. The B. F. Goodrich Co., Akron, Ohio, had a fine exhibit in the window of the principal shoe store.

* * *

At the county fair held at Barnstable, Massachusetts, The B. F. Goodrich Co. had an extensive and attractive exhibit of its many lines of footwear. This was under the personal charge of J. S. Capen, the director of New England sales. Mr. Capen seemed as popular among the fair visitors as he is with his customers, and the exhibit was a center of attraction during the few days the fair was held.

A recent discovery and an accidental one at that, which may be of interest to the rubber trade, is that of the finding of a deposit of fuller's earth, ranging in depth from 3 to 70 feet, in Stoughton, this state. The earth has been declared to be of excellent quality, and now, instead of changing the farm to a "bog" for the production of cranberries, a concern has been capitalized for $75,000 under the name of the Stoughton Earth Co., to mine and market the product, which has been given the name of "Stoughton Flake."

* * *

The Plymouth Rubber Co., manufacturer of heels and soles, proofed fabrics and artificial leather, will soon erect a new building at its plant in Canton. It will be of concrete, two stories high, 100 by 150 feet.

* * *

Robert B. Baird, vice-president of the Rubber Trading Co., New York City, with Mrs. Baird, last month toured New England by motor, and visited many friends in this section.

* * *

One of the perils of making one's own cement was exemplified in the explosion which occurred at the factory of the Hazen-Brown Shoe Co. at Brockton one day last month. A large quantity of material being churned, caught fire, and in the consequent explosion one man was seriously burned, eleven others more or less injured or their clothing set afire, and the ell in which the machine was located was demolished, causing a loss of about $10,000.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE activities of the rubber industry throughout the State continue to keep the several factories operating to their capacity and the orders on hand or in sight indicate steady work for an indefinite number of months. Large quantities of shoes, tires and other products are being daily shipped to all parts of the country, as well as to many foreign markets, the domestic demand being much greater than has been experienced in a long time. The shortage of help, which for several months has been a great problem and handicap with the different concerns, is as acute as ever.

* * *

The National India Rubber Co. has materially improved its plant at Bristol, and is still engaged in further additions and changes that are calculated to increase the size of its factory and to extend its facilities. At the present time approximately 3,500 hands are employed in the several departments. The factory resumed operations on Tuesday, September 5, after a two weeks' shutdown for the purpose of taking an account of stock.

Good progress is being made in the construction of the two-story brick addition to the vulcanizing department of the National company's plant, opposite the east end of Bourn street. This addition has a frontage of about 150 feet on Wood street and will be about 100 feet deep. As soon as the new structure is ready, a number of modern vulcanizers, and other machinery will be installed. A three-story brick building for a box shop is being erected on the site of an old structure, that will be 80 by 100 feet, with a tar and gravel roof, sprinklers and electric elevators. The company has also secured a portion of the old handkerchief plant, on South Main and Broad streets, Warren, that is to be used as an auxiliary storehouse.

* * *

At the monthly meeting of the Bristol Town Council in September the National India Rubber Co., upon its application through James W. Franklin, superintendent of the footwear division, was granted permission to lay a large sewer pipe from the factory on Wood street to the westward through Bradford street to the harbor. The company has for many years used

millions of gallons of salt water which is pumped from the harbor just south of the DeWolf Inn to the factory, and after being used is returned to the harbor. Trouble has been experienced for some time because of the failure of the present pipes to carry the water to the harbor, and the company is desirous of installing larger pipes, and thus overcoming the difficulty. The contract for the work has been awarded and it is proposed to lay iron pipes 22 inches in diameter.

* * *

The International Rubber Co. is operating its factory at West Barrington on an overtime schedule evenings, in an effort to catch up with rush orders, of which it has a large number on hand for carriage cloth, upon which the concern is at present specializing. The company has just completed an important addition for a new filter system. The addition is a wooden building, two stories high, and measures approximately 50 by 60 feet.

The new structure contains two sets of tanks, large enough to take care of all the waste from the dyeing vats during the day. Each day the waste is carried into one set of vats. The day after it reaches the filtration building the liquid is first treated with chemicals and then is pumped to the presses where much of the sediment and precipitation is eliminated. The liquor is then conducted by pipes to another tank and is passed over the sand filters. When it passes through this operation it is purified and its color has been changed from an inky black, in which condition it leaves the dyehouse, to clear water.

The installation of this system was made necessary because of complaints that were made from owners of oyster beds near the outlet of the stream into which the company's refuse water flowed. Suits were brought in the State courts against the International Rubber Co. and another corporation, with damages aggregating $100,000. These were finally settled and the concerns agreed to take such preventive measures as would be necessary to eliminate the contamination.

* * *

Frank B. Wilson has resigned the position of receiving clerk and storekeeper at the factory of the National India Rubber Co., Bristol, after a long term of service, to accept a similar position with the Lee Tire & Rubber Co., at Conshohocken, Pennsylvania, taking up his new duties early in September. Mr. Wilson had been employed by the National India Rubber Co. for nearly 30 years, 22 of which were in the position he has just resigned. He had charge of the raw material in the company's storehouse.

* * *

The Bourn Rubber Co., Warren street, Providence, is so driven with orders in practically all of its departments that it is constantly hiring additional help as fast as they can be placed and broken in. This is especially true in the lumbermen's and arctic departments. The firm is advertising for rubber shoe and quarter makers and is also taking on a number of learners.

* * *

The factory of the Narragansett Rubber Co. at Bristol closed on August 31 and reopened the day after Labor Day. During the shutdown the machinery was given a thorough overhauling and a number of repairs were made. The factory is very busy on orders and has enough work in sight for at least six months or more to come. Additional help is being constantly hired for all departments.

* * *

An addition that will entirely alter the appearance of the factory is being erected in connection with the main building at the Knightsville plant of the Atlantic Tubing Co. The new portion will cover in the big water tank at the top of the old structure that has been such a prominent landmark. The company reports an unusually busy season since something over a year ago.

Roswell C. Colt, who has been spending his vacation with his mother, Mrs. Samuel P. Colt, at her home in Bristol, has returned to Montreal, Canada, where he is purchasing agent of the Canadian Consolidated Rubber Co., Limited.

* * *

John J. Farley, formerly foreman of the mechanical department of the National India Rubber Co., Bristol, but now manager of the Milwaukee, Wisconsin, branch of the Federal Rubber Co., has been spending his vacation with his mother at Bristol.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

A LITTLE army of machinists will be put to work probably within the next two or three weeks installing tire-making equipment in the new addition of the Ajax Rubber Co., which is now rapidly nearing completion. The addition is three stories high. It is 350 by 60 feet and will enable the company to devote an extra 63,000 square feet of floor space to the making of the famous Ajax tires. A new engine room 50 by 100 feet has also been erected. An overhead bridge connects the new addition with the main factory, which is on the opposite side of the street.

* * *

The Thermoid Rubber Co. is justly proud of the record made by its brake lining, used on the car in which S. B. Stevens recently completed a trip from New York to San Francisco. The journey was made in the remarkable time of 5 days and 18½ hours. Thermoid brake lining was used for the cone clutch and "Thermoid 100 Per Cent" for the brake lining. In addition to giving perfect service on the trying journey the lining was in excellent condition at the end of the trip.

* * *

The rubber industry of Trenton will be widely advertised, in the near future, by means of miniature posters or stamps to be affixed to the outgoing mail of every concern connected with the trade. The poster, which is in three colors, shows a tire, in the center of which is the figure of a *seringueiro* tapping a rubber tree. It is estimated that hundreds of thousands of these stamps or posters will be sent out from Trenton in the next year, thus giving wide publicity to the importance of the rubber industry in this city.

* * *

The Post Tire and Rubber Co., which sent out a circular letter to prospective stockholders, intimating that it would consolidate three tire-making plants in Trenton under one head, has evidenly met with disaster. When the representative of The India Rubber World called at the offices of the concern to learn what progress had been made in the consolidation plans, he was confronted with a notice tacked upon the office doors announcing that the bank officials had obtained a distraining order covering the office furniture for rent alleged to be due. President Post, who, it is said, came here from Washington, D. C., to promote the business, could not be located. One of the companies it was planned to take over (according to the circular) announced that the first intimation it had of such a move was contained in an unauthorized statement in the letter seeking stockholders.

* * *

The Semple Rubber Co., which makes tubes exclusively, is steadily forging ahead. It was necessary recently to take over additional room for manufacturing purposes. Charles Semple, president of the concern, is a rubber man of many years' experience. He has reduced the making of tubes to a scientific basis. The uniform success that has attended his efforts seems to point

the way to a volume of business which is likely to outgrow the firm's present quarters in the near future.

* * *

Superintendent Metzler, of the Goodyear Tire and Rubber Co., Akron, Ohio, was a recent visitor here. He renewed many friendships with rubber men. Mr. Metzler was connected with the Hamilton Rubber Co. several years ago.

* * *

Frederick F. Katzenbach, vice-president and treasurer of the Katzenbach & Bullock Co., has returned from a vacation spent in the Adirondacks and along the Mohawk Trail.

* * *

A delegation of Trenton public school teachers was taken on a tour of inspection of some of the rubber mills a few days ago. The school board considered that in view of the important position occupied by rubber manufacturing in Trenton it would be well for the teachers to know something about the process of making it.

FIRST AID IN ELECTRICAL SHOCK.

The extended use of electricity in rubber mills, and the possibility of accidents makes interesting the following first aid treatment for electrical shock: Raise the limp body by the ankles with the whole weight resting on the neck, and then let it fall; hammer the soles of the feet without removing the shoes; pull forward the swallowed tongue. Such treatment frequently brings the injured man to consciousness. [N. E. L. A. Bulletin.]

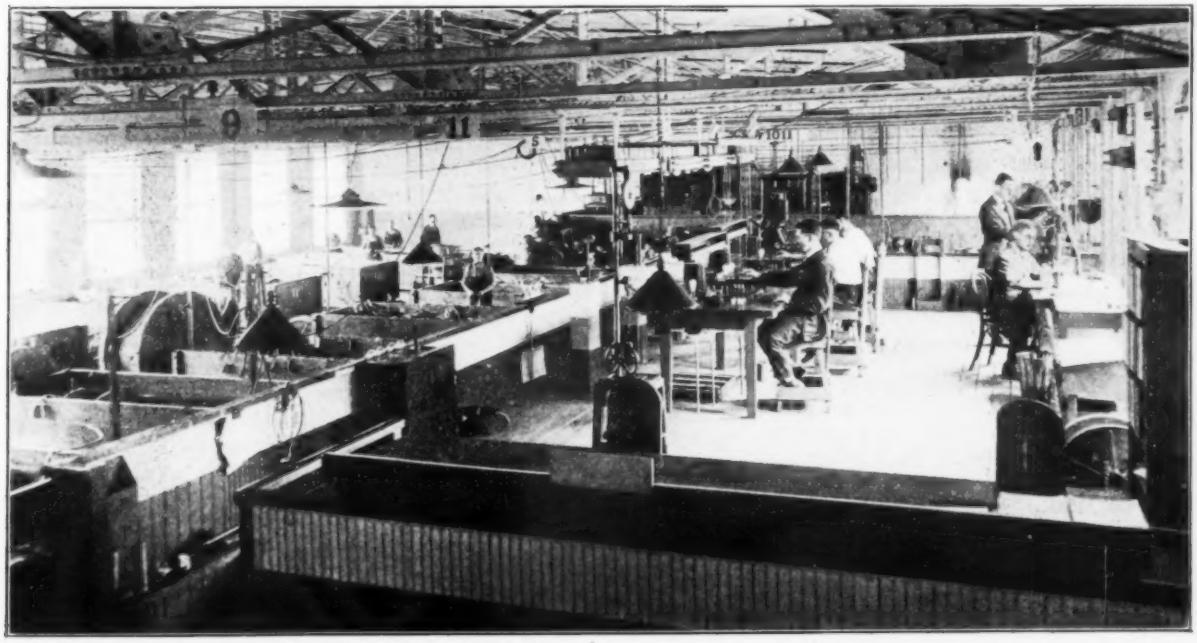
RUBBER STAMP PRICES REDUCED.

THE Traun Rubber Co., New York City, has sent out a new price list, showing a material reduction from former rates. The various kinds of stamp rubber, including the different degrees of hard and soft, red, white and oil proof, are now quoted at from 70 cents to $1.50 per pound for regular stock gage (14 Stubbs or 12 B. & S.). Other thicknesses rolled to order at special rates. Rubber dam, manufactured expressly for making molds, is quoted at $1.45 per square yard. Printing type compounds 3/8 inch in thickness now range from 40 to 80 cents a pound.

Sponge rubber is offered at varying prices, according to amounts ordered. Quotations here given are for single pounds, with a considerable reduction on 10-pound and 25-pound lots, and still heavier discount on 100-pound lots. For instance, sponge rubber in 20 by 24 inch sheets, 1/8, 3/16, 1/4 and 3/8 inch thick, is quoted at $1.25 per pound; for 10-pound lots, the price is $1.05 per pound; 25-pounds cost 90 cents a pound, and 100-pound lots are listed at 85 cents. Similar reductions are shown in quotations of other sponge rubber, the single pound prices being as follows:

One-half inch thickness, in sheets	$1.75
Sponge rubber strips, 16 inches long, machine-cut from sheets, any width, 1/8 to 3/8 inch thick	1.35
Sponge rubber for artists' use, in slabs 14 by 16 inches, unskinned, 1/2, 3/4 or 1 inch thick	1.75
Sponge rubber, skinned, as above	1.85

Prices of other varieties of rubber for stamp manufacturing purposes are unchanged.



INSULATED WIRE TESTING LABORATORY OF ELECTRIC CABLE CO., BRIDGEPORT, CONNECTICUT

AN INSULATED WIRE TESTING LABORATORY.

More important than any other department in an insulated wire or cable factory is the testing department. No expense is spared in equipping it with delicate and accurate instruments that instantly detect faults, and that measure with wonderful exactness the insulation that the rubber covering affords. This work is in the hands of expert electrical engineers, and records for every foot of rubber covered wire are taken. While this work was brought about primarily by insurance interests, the manufacturers have not only met their specifications, but in their search for perfection have bettered the requirements by a large margin. So it comes about that laboratory, mill room and particularly the testing room in insulated wire work are keyed up to the best and highest efficiency.

Speaking again of the testing room, its equipment, in part, consists of galvanometers and Wheatstone bridges, high voltage testing sets, machines for testing rubber, and fabric and yarn testing machines.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THERE are no complaints to be heard regarding the general volume of trade. Although a period of something like slackness has been experienced, owing to cessation of government orders, these have now come in again, a fact which supports the general opinion that hostilities are now expected to last well into next year, instead of coming to an end by Christmas. The movement in favor of protective duties is being energetically pursued, but it may be remarked, that although those of the free trade persuasion are not making much noise at present, they certainly intend to assert themselves when legislation comes to the fore.

A matter which is likely to be of even greater moment is already attracting a good deal of attention, namely, the future of labor. There is no doubt a difficult time before the employer, as it is recognized that the present high wages being earned up and down the country will be desired as a permanency by labor, and be objected to by the employers. The appointment of Mr. Henderson, a cabinet minister, as labor adviser to the government is a sign that trouble is apprehended. At any rate the appointment is a recognition that the relation of master and man is likely to undergo a change in the future. It rather looks as if the masters will be allowed to make a certain profit to be agreed upon, the rest of the profit to go to the men. This would be an extension of the profit-sharing schemes which are already in operation at a few large works. The question arises, however, will the capitalist care to conduct business on these lines, or will he think it preferable to invest his money in securities and live a life of leisure, or at any rate, one free from the recurrent anxieties of business?

RECLAIMING TEXTILES AND RUBBER.

Several patents have had as their object the recovery of the textile material as well as of the rubber from rubberized fabrics, but I do not think that any have proved commercial successes. The latest patentee in this direction is Charles de Villers, of Neuilly-sur-Seine, France,* who treats the fabric with tetrachlorethane at its boiling point, whereby the rubber goes into solution, leaving the fabric unaffected. The solvent having been removed by distillation, the rubber is obtained of a quality quite comparable to best quality fresh rubber. This latter phrase always appears in reclaiming patents, but rarely with strict propriety. However, a friend of mine who has seen some of the rubber, was struck with its quality, and I understand that it is about to be put on the market. Cotton fabric has generally been considered not worth recovering, but the present price of cotton is in favor of any recovery process. The difficulty about wool has always been that to be salable it must be absolutely free from particles of rubber, a result which does not seem to have been attained in previous patents. Perhaps this patent will solve the problem.

NITRE CAKE IN RECLAIMING.

The article in the August issue of THE INDIA RUBBER WORLD on the use of nitre cake in reclaiming has naturally attracted attention on this side, as the price of mineral acids is much higher than in pre-war times. Moreover, nitre cake, like cinders, can be had for the removal, if one is lucky enough to find a horse and cart available. Large quantities of this by-product of the nitric acid manufacture have been thrown into the sea, though recently, owing to the offer of a prize for a process whereby it could be utilized, it has found some applications. The article does not say what it costs delivered to the American works, which are stated to have used it successfully, but, anyhow, in the ordinary acid reclaiming of textile cuttings, the cost of the acid is not a large matter when the selling price of the reclaimed is considered.

*Noted in INDIA RUBBER WORLD, May 1, 1916, page 412.

RECLAIMING NOTES.

The Xylor Rubber Co., of Trafford Park, Manchester, shows continual development and I understand that extension of premises is considered inevitable. The reclaiming of red rubber is now a special feature of this works, very satisfactory results having been obtained.

Dilution of labor owing to the necessities of the war, that is, the replacement of men by women, has recently been adopted in reclaiming works to such extent as has been considered advisable, due regard being paid to the risks involved. With regard to this I hear that the factory inspectors have been much impressed by the automatic cut-out switch which is one of the advantages of the electric driving of rubber rolls.

BUSINESS AND PERSONAL NOTES.

I notice with regret the announcement of the death of Percy Carter Bell, who was better known in American rubber circles than in England owing to his long business life in New York City. The son of the late J. Carter Bell, public analyst for Cheshire and Salford, he obtained his first knowledge of rubber from his father, and at the works of I. Frankenburg & Sons, Limited, Salford, prior to Dr. Weber coming upon the scene.

J. C. A. Ward, chairman of Callender's Cable Co., is to represent the employes' side on the special tribunal to hear appeals of railway men with regard to military service.

The act extending the provision relating to unemployment insurance to rubber workers came into force on September 4, and at a special conference held previously in London, the rubber industry was represented by James Tinto of the Irwell and Eastern Rubber Co., Limited; Mr. Wilson, secretary of the India Rubber Manufacturers' Association; H. H. Duke, national organizing secretary of the Amalgamated Society of Rubber Workers, and A. Allison, London organizer of the same society. The trade generally appears to be against this extension of the act, mainly because of the difficulty in defining a rubber worker, and also because of the additional clerical labor which will devolve upon depleted office staffs.

Motor *char-à-bancs*, which have come into increasing use and size at tourist resorts during the last few years, were stopped by government order on September 1, on account of the scarcity of petrol, in which term is included any mixture containing hydrocarbons.

The Wood-Milne Co., Limited, like the North British Rubber Co., Limited, and the Dunlop Rubber Co., Limited, has found it necessary to extend its tire manufacturing premises. The company is now building a new works, having bought some extra land at Sandy Lane, some hundred yards distant from the present works at Leyland. The new works is to be devoted to the production of solid band tires and pneumatics.

Vacuum driers made by the J. P. Devine Co., Buffalo, New York, are giving great satisfaction to reclaimers here. With their use there is no need to go to the extent of drying necessary in the case of raw rubber, as several per cent of water can be left in the rubber, to be entirely removed in the subsequent process of sheeting on the rolls.

Determinations of specific gravity are frequently required in a reclaiming works, and it may not be out of place to mention

that the gravitometer made by Eimer & Amend, New York City, and featured in Mr. Pearson's book, "Rubber Machinery," is in regular use at one of our largest works. So far I have not heard of its being in use at any of our rubber factories.

SOME FOREIGN RUBBER INTERESTS.

THE American Consul-General in Sidney, Australia, reports that an American salesman visiting his post stated that he had secured orders for $300,000 worth of rubber tires in Australia.

According to a report by the British trade commissioner in Australia the total imports of rubber goods into that country during the first three months of 1916 amounted to £278,474 [$1,355,194], of which £130,245 [$633,837], more than 45 per cent, were from the United States. The balance was shared as follows: British Possessions, £85,437 [$415,779]; Great Britain, £62,167 [$302,536], and Japan, £625 [$3,042].

* * *

The French Government has recently placed an export embargo on talc.

* * *

The Russian Minister of Finance has decided that the certificates of origin now required for nearly all articles imported into Russia may be dispensed with in the case of samples of no commercial value. Such samples are exempt from import duty.

* * *

The American Consul at Saloniki, Greece, reports that several lines of American goods have been recently introduced there and that the Municipal Hospital has placed an order for $100 worth of American rubber gloves.

* * *

According to a recent report of the American Vice-Consul at Singapore, Straits Settlements, there is a great future for automobiles and motor trucks in those states.

The country is at present in a fine financial condition, due to the high prices for rubber and tin, the two leading exports. The greatest drawback to the rapid growth of the automobile trade is the lack of ocean tonnage.

Rubber tires cost approximately 15 per cent more than in America.

* * *

The Swedish War Trade Law of April 17, 1916, made it illegal for an importer in Sweden to furnish an exporter in Great Britain with information as to the disposal of goods.

The British exporter was therefore often obliged, in reply to challenge of the British Customs, to admit that he was unable to furnish the evidence required from him and was thus exposed, through no fault of his own, and simply by the operation of the Swedish law, to heavy penalties.

These circumstances led the British Government to issue a Royal Proclamation prohibiting the exportation to Sweden of all commodities, and now, apparently as a result of the British export embargo the Swedish Government has placed an export embargo on the following articles containing rubber:

"Hose, transmission and conveying belts, whether sewn or not, heddles and other cotton articles containing rubber; tissues and other textiles not containing silk, impregnated or covered with rubber, or attached by means of rubber solution or layers of rubber."

RUBBER SEED OIL.

According to advice from the Far East, the Government of the Federated Malay States has decided that no export duty will be imposed in respect to rubber seed oil or products for a period of ten years from June 9, 1916. The object of this decision is to encourage the local industry of extracting oil from rubber seed and the preparation of this oil and residues or other products of the seed for the market.

THE RUBBER TRADE IN GERMANY.

By Our Regular Correspondent.

GENERAL conditions are better than one would expect under the circumstances. Many factories are working overtime, and a number of concerns have greatly enlarged their plants, while others have entirely changed the character of their products, adding new machinery and adopting new processes to meet the demands created by the war.

Labor conditions, generally speaking, continue excellent. The machine and metal industries have beeen specially favored by the military authorities on account of the importance of having skilled mechanics in those shops which are working on war contracts. The same applies to certain branches of the rubber industry.

There is a scarcity of skilled and also of unskilled labor in some districts, where the industries are not suited to the employment of women and disabled soldiers, and where war

AUSTRIAN ARMY TRANSPORT MOTOR TRUCK. NOTE THE WORN STATE OF SOLID RUBBER TIRES.

prisoners are not available. For a time the government allowed furloughs to soldiers needed for work at home, but of late the pressure at the battle fronts has become so formidable that this course can no longer be followed.

There is plenty of money in circulation, and the financial situation is far better than conditions would lead one to expect. Savings deposits show an increase.

Manufacturers of aeroplanes, motor vehicles and electrical supplies continue very busy with war contracts, and in producing stocks to be held in reserve in anticipation of a demand for cars upon the cessation of the war.

The building trades are most severely affected by the war. No new work is started, architects and builders being occupied with the slow completion of old contracts and a few factory extensions mentioned above.

The brewing industry, which has always been a large purchaser of rubber goods, is suffering from the lack of raw materials and the restrictions placed on the consumption of its products.

INCREASED COST OF LIVING.

Notwithstanding the fixing of maximum prices for foodstuffs by the authorities, the regulating of the consumption of such products and the control of distribution by the system of sales against supply cards, furnished monthly to each inhabitant, the cost of living in our large cities and industrial centers has increased more than 50 per cent within the last year. This is chiefly due to the poor crops in 1915. This year, owing to careful fertilization and the more abundant supply of labor, afforded by war prisoners, together with more favorable climatic conditions, more abundant crops have been produced, and it is

hoped that the government will not experience too great difficulties in furnishing an adequate quantity of foodstuffs within the means of our laboring classes.

TRADE CONDITIONS.

Domestic trade has either been greatly curtailed or radically altered in character, while our foreign trade is greatly lessened. We cannot carry on normal business relations with the Americas and other countries beyond the seas, but trade is fair with Austria-Hungary, Bulgaria and Turkey. A regrettable development is that neutral countries, like the Netherlands, Scandinavia and Switzerland, to whom we can make deliveries, are neglecting our markets, obeying, doubtless, the demands of our island enemy.

RAW MATERIALS.

The blockade has stopped or greatly diminished the amount of raw materials, which we imported in vast quantities before the war, and such materials are scarce and very costly now that the stocks most manufacturers had in reserve have become exhausted.

As has been reported in previous letters, the government placed many restrictions upon the use of raw materials in manufacture. Production is limited on all articles except those needed by the government.

CRUDE RUBBER.

Although small quantities of crude rubber are constantly arriving, they have little or no effect on the market for this commodity. Prices continue very high, from 30 to 40 marks per half kilogram [$7.14 to $9.52 per pound], according to quality.

Reclaimed rubber and the artificial sorts also obtain very high prices, the latter being as costly as the natural product and finding a market only on account of the present abnormal conditions.

Rubber substitute sells at from 2 marks to 2.50 marks [49 to 60 cents] a pound.

Unusually high percentages of reclaimed, artificial and substitute rubber are being used in compounds for rubber goods for the army and navy. No crude rubber is allowed for private use, and substitute qualities are alone available for this purpose. Reclaimed rubber is used very extensively, mostly for military requirements, in spite of its quality, which is leaving more and more to be desired.

COLLECTION OF RUBBER WASTE.

The government has ordered that any quantity of rubber, either crude or vulcanized or reclaimed, exceeding 1 kilogram 12.20 pounds] in weight, is to be turned over to the concerns designated by the Rubber Clearing House. The names of these concerns were published in the August 1916 issue of THE INDIA RUBBER WORLD.

All rubber scrap must be sent to the nearest of these dealers and the cost of forwarding is refunded to the shipper. Rubber scrap is classed in 35 grades and payment is made according to the schedule published.

The least valuable grade is made up of cycle tire beads. Hard rubber is not purchased, nor is armored hose, except when the wire has been removed from the latter.

Rubber thread waste is paid for at the rate of 40 cents per pound; rubber footwear at 15 cents a pound; inner tubes fetch 70 cents, if soft and in good condition; if crusty, only 30 cents a pound.

The soldiers at the front are doing much good work in collecting waste rubber, as well as other kinds of waste materials.

These prices may appear extraordinary to your readers, but they must remember that we are living under conditions far from normal.

The cost of the war will be paid by future generations, and this burden will be only a slight reminder to them of the sacrifices and privations endured for them by their ancestors.

Rubber Planting Notes.

CRUDE RUBBER INDUSTRY IN BURMA.

ACCORDING to a report from the Netherlands Consul at Rangoon, the total exports of crude rubber from Burma during the fiscal year 1915-16 amounted to 1,285,984 pounds.

The following table shows the area under rubber cultivation in Burma and the amount exported in the past five years, as given in the Report on Maritime Trade and Customs Administration of Burma:

Year.	Acres.	Pounds.
1911-12	32,772	310,340
1912-13	44,029	526,176
1913-14	50,946	765,072
1914-15	57,785	987,392
1915-16	57,843	1,285,984

As a result of discussion at the beginning of the fiscal year 1915-16, between the Lieutenant-Governor of Burma and representatives of the Lower Burma Planters' Association, the rules regulating grants and assessments of land for rubber cultivation in Burma have been considerably modified. The planters represented that the extension of rubber growing was being hindered by the liability of rubber estates, leased under the rules then in force in lower Burma, to a land revenue assessment which might rise to as much as 25 rupees [83 cents] an acre.

Accordingly, a revision of rules was agreed upon, providing for the issue of grants instead of leases, and the levy of royalty on the net value of the rubber, combined with a moderate revenue assessment, instead of the previous liability to land revenue, the rates of assessment to be reconsidered every 20 years.

This new rule only affects lands granted for rubber cultivation on and after July 1, 1916. For land granted or leased under previous rules, certain abatements of royalty and land revenue assessments are allowed, and owners are offered the opportunity of surrendering their land at any time in the next ten years, and of taking out a grant under the new rules.

Experience is said to show that large areas in Burma are suitable for rubber cultivation, and the joint committee, formed to draft the foregoing rules, considers that an estate in full bearing should yield not less than 350 to 400 pounds of rubber per acre.

EXPORTS OF CRUDE RUBBER FROM MALAYA.

In his report for 1915, the Director of Agriculture, Federated Malay States, says: "The rubber crop for the Federated Malay States is returned at 36,380 tons, and to this must be added 6,666 tons from the unfederated states under British protection. It would probably be safe to add 8,000 tons for the colony, making a total of about 51,000 tons for Malaya. But it must be remembered that these returns only include properties of 100 acres or more area, and no account is taken of the output of rubber from small holdings. The export returns of the commissioner of trade and customs show that 44,523 tons of crude rubber were exported from the Federated Malay States in 1915. I have no reliable figures at present of the export of rubber from the colony and the other states of Malaya, but from

such facts as are available it is certain that it cannot be less than 24,000 tons, making a total export from Malaya of more than 68,000 tons."

CRUDE RUBBER EXPORTS FROM MOZAMBIQUE.

The American vice-consul at Lourenco Marquez, Portuguese East Africa, reports that the total exports of crude rubber from Mozambique during the year 1915 amounted in value to $20,115.

CROP AND RAINFALL PERCENTAGES IN CEYLON AND MALAYA.

FRANK G. SMITH, secretary of the Rubber Growers' Association, London, England, has sent to the members charts and statements showing the percentages of crop

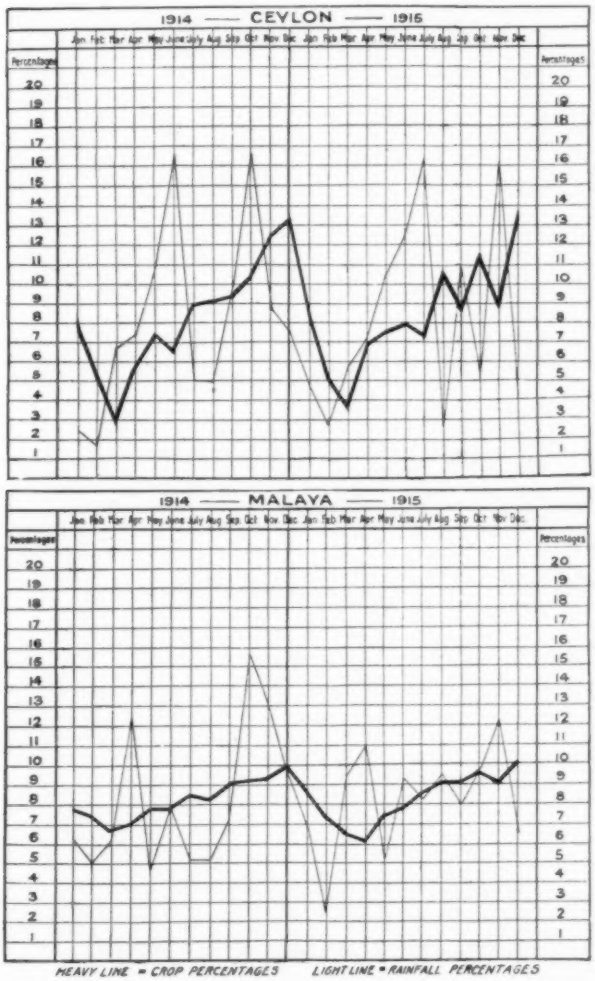


CHART SHOWING PERCENTAGE OF CROP HARVESTED, AND OF RAINFALL RECORDED MONTHLY IN 1914 AND 1915, BY REPRESENTATIVE ESTATES IN CEYLON AND MALAYA.

harvested, and of rainfall in 1913, 1914 and 1915, recorded monthly by a number of estates in Ceylon and Malaya. These are, as far as the two first-mentioned years are concerned, duplicates of the charts which were reproduced in THE INDIA RUBBER WORLD of Januuary 1, 1916. The 1915 figures, together with those of 1914, are shown graphically on that portion of the charts reprinted here.

As in previous years, there is shown a very general resemblance or parallelism between the rainfall and the crop, though sometimes the fluctuations of the latter follow rather than coincide.

The Malaya chart shows great regularity in the movements of the crop curve during each of the three years.

The Ceylon chart for 1915 shows very clearly how the crop fluctuates with the variations in rainfall. It will be noticed, however, that the prolonged dry period from November, 1914, to February, 1915, had a much greater effect on the crop than the briefer dry spells in August and October, 1915.

Ceylon's heaviest yields in 1915 were August, 10.56 per cent; October, 11.30 per cent, and December, 13.72 per cent. March made the lightest showing, 3.62 per cent of the total crop. Malaya did not show such heavy fluctuations, the lowest yield being 6.33 per cent in April, and the highest 10.10 in December.

Taken as a whole, the graphic lines follow, in a general way, those of previous years, though the rainfall in Malaya at no time in 1915 reached as high a percentage in any one month as in the two previous years.

THE RUBBER TRADE IN MALAYA.

By Our Regular Correspondent.

THE London rubber market has a grievance against Singapore, a grievance which is being voiced vigorously in the financial press. The complaint is that the Imperial Government, while forbidding the export of rubber from London to America and other neutral countries, allows the export from Singapore, with the result that Singapore is rapidly becoming the world's rubber mart and the London market is declining in importance. From the local point of view this is just as it should be. It is felt that Singapore is in every respect best suited to be the center of the world's rubber trade and the sooner it becomes recognized as such the better for the Straits Settlements and Malaya and the rubber industry as well.

When the war broke out Singapore had its great chance. Hamburg ceased to count, the London market scarcely knew what course to take, but Singapore had the rubber and the buyers, and the ability to ship east or west to the great centers of consumption. Now Singapore has the biggest open market in the world, and business can keep going without war restrictions. Moreover, freight conditions, to a large extent, force rubber from Java and Sumatra to pass through Singapore, where it is subject to the system of export permits adopted to check the export of British or other rubber to Britain's enemies.

The London dealers are greatly concerned, but it would seem that their efforts to check the development of the Singapore market have altogether failed. Even without the war, the decline of the London market was certain, though it would have been a longer process; but as things are, the pace at which Singapore has forged to the front has been wonderfully rapid. With exports practically free here, but restricted in London, the obvious policy is for the bulk of the sales to be made in Singapore, thus preventing shipments to London growing to an extent to cause a glut, and a consequent fall of prices.

London critics say further that by present arrangements Singapore is playing into the hands of German-Americans, whatever this may mean. It is mere clap-trap, however, for whatever German-American influences exist are much more effectively combated here than in London, according to local opinion, for in Singapore such movements are more easily watched and checked. It is certain that American capital is taking a lively interest in the rubber trade; indeed, it would be astonishing if this were not so, and owners of rubber plantations in Malaya, when they get definite offers for their property are quite entitled

to look at these propositions from a purely business point of view. The political question is one for statesmen. When it looks as if such sales might be harmful to national interests, it is for statesmen to step in and make such rules and regulations as are thought to be necessary. A rubber plantation remains British as long as it is on British soil, and is thus under the control of the British Government. The capital may be foreign, but the produce is here, and its disposal is thus under British control. There is plenty of German money in rubber plantations, but this does not help Germany to get rubber at the present time.

A recent report on the Federated Malay States showed that at the end of 1915 the total area of rubber estates of more than a hundred acres in extent was nearly 500,000 acres, of which the producing area was about 281,130 acres, an increase of nearly 66,000 acres on the previous year. The amount of rubber exported was 44,523 tons, of an estimated value of $93,660,621 (the local dollar is worth 2*s.* 4*d.*). This was an increase of nearly 14,000 tons compared with 1914, and it is estimated that this year about 60,000 tons will be exported. It is to be noted that this is from the Federated Malay States alone, and there is an appreciable production in the Straits Settlements also.

Considerable comment has been aroused by a statement by a correspondent in a London financial paper to the effect that planters are taking advantage of the present abnormal times, when estate staffs are reduced to a minimum on account of so many men having joined the army, to try and force the hands of directors. It is alleged that they are sticking out for big increases in salary and highly favorable agreements under threat of throwing the work up, if their demands are not complied with. Correspondents have not been slow in taking up the cudgels on the other side, and on behalf of the planters it is pointed out that those who have stayed behind rather than accompany their comrades home to join up, would usually much rather be fighting than planting, and if all the men who wanted to go had gone, a good many estates would have come to a standstill.

It may be that some have asked for increased pay, but then, in a good many cases they are doing double work, which was not specified in agreements. Again, it must be remembered that before the war directors had things very much their own way. It was easy to get men with no previous experience to act as assistants on estates at a cheap wage, with the consequence that the rates of pay tended to go down, and often at the end of a four years' agreement, a man, if he was unable to get the management of an estate, found himself on the same level as a new man brought out from home, who had never seen a rubber tree before. The war is making a great many changes. If it renders cheap white labor an impossibility in the future it will have done one good thing.

RUBBER ADULTERATED WITH STARCH.

B. J. EATON, chemist of the Department of Agriculture of the Federated Malay States, reports in the "Agricultural Bulletin of the Federated Malay States" on a curious case of adulteration of rubber.

A peculiar specimen of rubber was received by Mr. Eaton from the Secretary of the Johore Planters' Association. It consisted of a thin sheet resembling a piece of drab-colored leather or hide. The rubber was easily torn and had a pure white interior, resembling flour. On examination the sample was found to contain a large quantity of starch, which was probably tapioca starch. It was found impossible to estimate the starch by washing it out on the crêpeing machine, the rubber refusing to cohere on the machine and becoming a mass of crumbs, the particles being washed through the sieves and lost. By boiling the rubber in dilute hydrochloric acid and subsequently in pure water and by crêpeing it on a small experimental crêpeing machine with hot water, a fairly coherent sample was obtained, which could be subsequently crêped and washed with cold water on an ordinary factory crêpeing machine and converted into a thin crêpe on a factory sheeting machine. Even after this treatment the rubber resembled lace and was very weak. The loss on treatment, which probably consisted almost entirely of starch, was 50.9 per cent.

It had been previously reported to Mr. Eaton that starch, in the form of tapioca or sago, which is easily obtainable locally, was probably used by contractors' tapping coolies on estates where contract tapping exists. The managers of such estates pay on the wet weight of rubber collected, making an allowance for the water content of the sheet of rubber obtained, the sheets being weighed some time after being machined and hung to drain. If starch be used as an adulterant, it absorbs a large proportion of water and the manager pays not only for the added starch, but for water, since the wet sheets, on drying, lose much more weight than would normally be allowed for. The sample reported on was, however, the first in which starch had been discovered, although two suspected samples from another estate were received some time ago, in which no starch was found.

Mr. Eaton believes that the large amount of starch found in this sample, which was taken from a parcel of rubber from Johore consigned to Singapore and sold at the auctions there by a Chinese, would suggest that the adulterant was deliberately added for selling purposes.

This information should be a warning to planters who use contract tappers to look out for adulteration of this nature. It would probably be easily detected in sheet rubber when dry, but not in crêpe, since the starch would probably be almost entirely removed on the crêpeing machine, when fresh coagulum is washed.

Mr. Eaton suggests the use of the standard test for identifying the presence of starch, which is to add a few drops of a dilute solution of iodine to the suspected sample of rubber or latex, when a blue color will be produced.

[In connection with this report it is interesting to refer to the ancient practice of adulterating Brazilian rubber with flour or *farinha*, which is described at length in "The Rubber Country of the Amazon," by Henry C. Pearson.

In Para, the principal rubber market of Brazil, rubber houses employ a very capable body of men, who receive the rubber, cut and examine it, and pack it in boxes for shipment. The cutting of the rubber, he says, "is an absolute necessity, as some lots are badly adulterated. This adulteration takes three forms: In one, a substance, *tabatinga*, is added to the latex, giving a short-fibered rubber that is wholly without nerve. The second is the addition of *farinha*, which increases bulk and weight, and also makes the rubber very short and pasty. The third is a mixture of sand and *farinha*, which is, perhaps, the worst of all."

Mr. Pearson, in this book, tells us that the adulteration of fine Para by the addition of *farinha* was reported by Herndon as far back as the early '50s. "The gatherer does not put the *farinha* in altogether for the sake of adding weight; its presence causes a quicker coagulation, and if he gets a little too much he adds a little lemon juice and is able to produce exceedingly smooth films, free from bubbles, and very quickly."

"*Farinha*-adulterated rubber looks beautiful until red ants burrow into it and eat the *farinha* out. Then when the rubber *pelles* are cut open the whole fraud is apparent and the adulterated rubber is rejected. Sometimes the rubber is shipped before the ants get a chance at the *farinha*, and it is necessary for the rubber manufacturer to know whether it is there or not, as the strength of the rubber will show an extra shrinkage if it is present."

Mr. Pearson recommended a very simple test, which is to have a water solution of iodine and potassium iodide, which may be applied with a brush to the freshly cut surface. If *farinha* is there the surface will turn from a yellowish mahogany color to blue.]

FACILITIES FOR RUBBER TESTING IN THE EAST.

The Department of Agriculture of the Federated Malay States is now equipped to vulcanize, test and report on samples of rubber from any plantation estates.

Samples of rubber are sent to the Department of Agriculture, together with particulars of methods of preparation, and the results of tests are reported to the estate sending in the samples. No doubt these reports will be in the course of time published in bulletins for public information and benefit.

Mexican Rubber Notes.

THE position of rubber producing companies in Mexico, at the present time, is far from encouraging. Recent proceedings bring into prominence the insecurity of such enterprises in the United States. The affairs of two such companies serve to emphasize this.

PROPERTY SEIZED BY GOVERNMENT.

The Conservative Rubber Co. was incorporated under the laws of Arizona in October, 1901, the capital stock being $1,200,000, consisting of 6,000 shares at $200 per share. These were marketed on the monthly payment plan. The principal office is in San Francisco. The property consists of large tracts in the states of Tabasco and Chiapas, Mexico, in which there are some wild rubber trees, and on which the first planting of *Castilloa* trees was done in 1902. There are reports that the Carranza Government had seized the property of the company for unpaid taxes amounting to $35, and that the company had lost its license to do business in California through failure to pay the corporation tax, and also, that the stockholders had been notified that owing to the political situation in Mexico, it would be better to lose the property and wind up its affairs. The shareholders, many of whom have bought shares on the monthly payment plan, have applied to the courts to prevent what they consider a plot to wreck the company.

CALLED FOR ASSESSMENT.

La Zacualpa-Hidalgo Rubber Co. has recently called an assessment of 12½ cents per share. As this stock has been inactive for some time, and had been offered at about 30 cents a share, the assessment was a heavy one. The assessment was made to reimburse those stockholders who had advanced about $56,000 to carry on the affairs of the company, and to continue to meet expenses.

This corporation, although not the oldest, is, perhaps, the largest rubber planting company in Mexico. It comprises 1,897 acres situated in the Department of Sosconusco, in the State of Chiapas. A large portion of the tract is planted with *Castilloa* trees. Of the authorized capital of 800,000 shares, there were outstanding at the end of its fiscal year, February 29, 1916, 619,-

Castilloa TREES ON LA ZACUALPA PLANTATION.

597⅔ shares of stock at a par value of $3,097,988. The estate is equipped with modern improved machinery for the preparation of the product for the market, and last year produced 143,700 pounds of rubber. About one-half of this was sold during the year at from 47 to 76 cents a pound, the net receipts being $39,770.84 and on March 1 there were 72,000 pounds in the hands of its sales agents. The annual report showed receipts $59,280.90 and disbursements $45,857.75. Presumably, the balance and the $56,000 mentioned above as advanced by some of the stockholders, has been absorbed by expenses since March 1.

"GRINGOS" OBLIGED TO GET OUT.

The following letter shows the discouraging position of some Americans connected with the rubber planting industry in Mexico. It reads:

TO THE EDITOR OF THE INDIA RUBBER WORLD:

Dear Sir—You will notice from this, that I am still making an effort to strive through the long-winded Mexican turmoil, but it looks very much as if all "Gringos" will have to get out, as we have now received a final message from the State Department, which is very urgent and to the point. I was in hopes of staying on, but from the rather serious conditions that now exist, I doubt very much as to the wisdom of it and, it is upon this account principally that I am writing to ask you about Central or South America. Do you know by any chance of an opening in my line down that way. I thought first of going into Guatemala temporarily, to await developments, with the idea in view of being near at hand, as I still have good interests here. What do you advise? Yours very cordially,

PIONEER.

OFFERS PRIZE FOR TAPPING PROCESS.

Another letter gives some insight into other difficulties which Mexican planters must face. This letter reads as follows:

TO THE EDITOR OF THE INDIA RUBBER WORLD:

Dear Sir—We have a property in Mexico of 1,200 acres of *Castilloa* rubber trees which are in excellent condition, except that for the last four years we have had to practically abandon them, and the tropical jungle has no doubt enveloped them. More than half of these trees were planted previous to 1909, beginning with 1904. In 1909 we had a fire in which probably three-fourths of our trees were burned. These afterwards grew up again from the stump, so that most of our property really dates from about 1909, 1910 and 1911.

You understand the difficulty that has been experienced in getting a successful method of tapping the *Castilloa* tree. Experiments that we have made and that we have known of, lead us to believe that there is an ample supply of latex in these trees to yield a handsome profit if a proper method of tapping can be devised. What we would like to do is to create an interest in investigation and experimentation along this line. If the Mexican Government were up-to-date it should be the party to foster investigation and to offer incentives for this work, but that is out of the question. We fortunately have ample funds and while I have not consulted with the other officers of our company personally, I would favor offering a reward of a sufficient amount to induce people who are in position to do it, to work and experiment along the lines of inventing or discovering a tapping system. If other people who have similar interests are in position to do it, it would only be fair that the burden of this be divided. However, I think there are few rubber planters, or former rubber planters in Mexico, who have much in the way of rubber trees, let alone much money, to do anything with. If a number of concerns could join together they could make the reward larger and thus offer greater inducements to effort.

Do you think that an offer of a reward of $500 or $1,000 would stimulate effort in this direction, and would you be will-

ing to take hold of the project and give it publicity? Could you put us in touch with others who are interested and who might be willing to join in the project?

Yours truly, PLANTER.

THE RUBBER TRADE IN BRITISH GUIANA.

By Our Regular Correspondent.

THE steady progress that is being made by the Consolidated Rubber and Balata Estates, Limited, as revealed by the report and the chairman's speech at the annual meeting held on June 27 in London, should prove a source of gratification to all who take wide views of the industrial situation in the Guianas. The operations of this company play no small part in British Guiana's commercial fortunes, and its progress is anxiously watched by a larger circle than a mere collection of investors looking for dividends, since the industry provides lucrative employment for a large portion of the laboring classes, and consequently makes a useful contribution to the trade of this colony. Therefore, the information contained in this report that the company is each year acquiring a greater measure of stability is exceedingly refreshing, when it is to be remembered the many vicissitudes through which it has passed. For seven years has it been in existence and not yet has the industry been sufficiently prosperous to return a dividend to the ordinary shareholders, and there are still a certain amount of arrears to pay off upon the preferred shares. But the company has passed through the worst of its difficulties, and is now entering upon the profit-earning stage, and its future, unless some very unfortunate calamity occurs, will be roseate.

In 1913 the profits amounted to $1,310 only; in 1914 to $59,890, and in 1915 to $77,945. These profits are still only sufficient, after applying $10,000 to reduction of preliminary expenses account and carrying forward $6,085, to pay a dividend of 5¼ per cent on the 7 per cent preferred shares. But the improvement in the company's position that has manifested itself recently is of such a consistently upward nature as to leave very little room for doubt that a prosperous future awaits the enterprise. Much that has been achieved is due to the cautious and skilful management of the local attorney, A. F. White, who, with so many obstacles in the way, has landed the concern on a bed-rock footing.

The mill-stone of the balata companies which participated in the boom of 1910-11—the cost of prospections—has practically disappeared from the neck of the Consolidated, the cost of this item being only $3,375 in 1915, against $22,770 in 1914, and $41,390 in 1913. This, as the chairman pointed out, is exceedingly satisfactory. Still more encouraging is it to read that the prospective collections for this year are even better than they were in 1915, in which year they were quite good, and would have brought handsome returns to the company, had the market been in a more settled condition. The chairman stated that "already an early spring crop of quite respectable dimensions has been gathered; in fact, a larger spring crop than we have ever succeeded in securing before," and that all expeditions for the summer collections had been sent out. "The prospects for this year are satisfactory, and, given favorable weather—a factor of great importance—we shall hope to obtain greater results which will show continued progress for the company."

Thanks to the Crown Lands Regulations at British Guiana, the balata industry is not one that is likely to be killed out by overworking it, for the health and life of the trees are safeguarded and insisted upon by the government, and providing the regulations are observed, the industry will be maintained for years.

The most important part of the chairman's speech, however, is that part which deals especially with the rubber industry. Mr. Tayler spoke in figures that will come as a surprise to many, especially to those who are accustomed to think of rubber growing in these parts in very humble terms. On the Aruka plantation 317 acres are under cultivation, and 20,000 trees are planted. The estate comprises 1,000 acres and it is being cleared and planted year by year with *Hevea Brasiliensis*. On the Koriabo estate, 106 acres are planted, and on the Aliki and Wycarabee estates 252 acres are planted. On the whole of the company's rubber properties 60,000 trees are planted, of which about 20,000 are tappable this year, 30,000 in 1917 and 47,000 in 1918. The production in 1915 was only 4,500 pounds, but most of the preliminary work has now been undertaken, and the colony's rubber exports should increase rapidly.

In a quiet way the Consolidated company has laid the foundations for a promising rubber industry for British Guiana, and when in the years to come, rubber estates are dotted all over British and Dutch Guiana, the sterling work of this pioneer company should not be forgotten.

I am tired of preaching the possibilities of rubber in these parts, and consequently am the more glad to welcome the practical demonstration that is now being given by the Consolidated. This company is pursuing a sound financial policy, paying the arrears of interest, and retaining as much capital as possible in its possession to carry on the large schemes of development which are just beginning to bear fruit. As the chairman said, the directors, seeing the possibilities of British Guiana, are looking far ahead, and there can be no doubt that they are laying part of the foundations of the future prosperity of the colony. For that reason alone, their progress should be watched by every interested party with the keenest of sympathetic interest.

ADDITIONAL SURTAX ON IMPORTS INTO PARAGUAY.

A law enacted February 17, 1916, provides that all articles imported into Paraguay shall be subject to an additional surtax of 1½ per cent ad valorem (based on official valuations prescribed by the customs tariff), while on all exports an additional surtax of 1 per cent ad valorem is to be imposed.

REGISTRATION OF TRADE-MARKS IN LATIN-AMERICAN COUNTRIES.

The importance of early registration of trade-marks used in commerce with Latin-American countries cannot be overlooked by American rubber manufacturers.

In 1915 the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C., issued a report describing briefly the formalities of registration, and also indicating the offices to which applications should be directed, the duration of protection, and the principal official fees. A revised edition of this publication, which is entitled "Tariff Series No. 31, Registration of Trade-Marks in Latin-America," with corrections to date, has been issued, and copies can be obtained upon application to the Bureau of Foreign and Domestic Commerce, Washington, D. C., or its district offices. Information regarding countries that are not covered by this publication may also be obtained by addressing the Washington office of the Bureau.

SCANTY YIELD FROM WEST INDIAN SAPODILLA.

Attention has been drawn to the fact that the Sapodilla tree (*Achras Sapota*) grown in the West Indies, although supposed to be of the same species as that grown in Central America, does not yield as freely as the latter. A thorough tapping of a 20-year-old tree 39 inches in girth at three feet from the ground yielded 3½ fluid ounces of latex, which gave 1¾ ounces of chicle. This gum was submitted to one of the largest chewing gum manufacturers in America, who stated that it could be marketed to advantage here, but the low yield of the gum as compared with that secured from Mexico and Central America renders it doubtful whether its collection would be profitable. The chief value of the tree in the West Indies lies in its excellent fruit, which, it is said, might be still further improved by careful selection experiments. [Report of the Agricultural Department, Dominica, British West Indies, 1914-1915.]

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED AUGUST 15, 1916.

No. 1,194,393. Water closet seat comprising a core of laminated wood and a veneer of hard vulcanized rubber. M. L. Adler, New York City, assignor to the Brunswick-Balke-Collender Co., Chicago, Ill.

1,194,408. Packing comprising four plies of a single strip of fabric impregnated with rubber, and an intermediate endless wire strand. R. B. Meany, Weehawken, N. J., assignor to Peerless Rubber Manufacturing Co., New York City.

1,194,428. Reinforced pad for shoes. L. S. Samuel, Newark, N. J.

1,194,651. Rubber tired vehicle wheel. J. M. McPheeters, Palo Alto, Calif.

1,194,681. Tire armor. A. Szkoknya, Chicago, Ill.

1,194,704. Wearing surface for convevor belt comprising layers of fabric united by rubber and vulcanized. W. F. Bowers, San Francisco, Calif.

1,194,732. Rubber and canvas sole for bathing and outing shoes. W. Greilich, Brooklyn, N. Y.

1,194,789. Sectional cushion tire. J. Spyker, Amsterdam, Netherlands.

1,194,790. Resilient wheel. J. Spyker, Amsterdam, Netherlands.

1,194,793. Hose connection. H. V. Styers, Warwick, N. Y.

1,194,797. Tire for vehicle wheels. F. S. Weise, Baltimore, Md.

1,194,854. Demountable rim. W. T. McLean, assignor of one-half to G. W. Lyndon—both of Chicago, Ill.

1,195,023. Inflatable figure in marionette baseball performance toy. T. H. Jackson, Scranton, Pa.

1,195,036. Elastic fabric. C. A. Lapworth, West Bridgewater, assignor to The Lapworth Webbing Co., Brockton—both in Massachusetts.

1,195,117. Device for removing wrinkles. M. Spellerberg, Berlin-Friednau, Germany.

1,195,125. Fountain pen. E. Winne, New York City.

ISSUED AUGUST 22, 1916.

1,195,327. Inside heel cushion of sponge rubber. J. W. Arrowsmith, Morristown, N. J.

1,195,354. Garter or hose supporter. R. K. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York City.

1,195,365. Life preserving garment with inflatable portions. J. Krem, Philadelphia, Pa.

1,195,512. Tire for wheels and means for retaining the same. E. H. Schwarz, New York City.

1,195,556. Resilient tire. T. L. Carbone, Charlottenburg, Germany.

1,195,580. Hose coupling. F. Hachmann, assignor of one-fourth to F. C. Schoenthaler—both of St. Louis, Mo.; one-fourth to J. Merz, and one-fourth to G. S. Haskell, Chicago, Ill.

1,195,621. Catamenial napkin. E. Sprague, Minneapolis, Minn.

1,195,640. Antiskidding device for vehicle wheels. S. Baruch, New York City.

1,195,709. Fountain pen. L. J. Most, New York City.

1,195,735. Vehicle bumper comprising a block of rubber. F. T. Roberts, Trenton, N. J., assignor to The Paramount Rubber Co., Cleveland, Ohio.

1,195,913. Tire armor. E. B. Curry, Payson, Ill.

1,195,931. Surgical appliance comprising pneumatic knee pads. J. L. Sowell, Jasper, Ala.

1,195,939. Valve attachment for pneumatic tires and the like. C. E. Baker, Carmarthen, Wales.

ISSUED AUGUST 29, 1916.

1,196,069. Vehicle tire. L. F. N. Baldwin, Cranston, R. I.

1,196,250. Aseptic appliance comprising a sheet of comparatively thick rubber. A. O. Kuhn, San Francisco, Calif.

1,196,539. Air-purifier comprising rubber tubes. E. I. Goldberg, New York City.

1,196,545. Air bulb in handle for canes, umbrellas, etc. S. E. Holdzkom, Longport, N. J.

1,196,604. Vehicle wheel rim. C. H. Snyder and E. Stallter, Rockford, Ohio.

1,196,608. Rubber heel. J. F. Standish, Winthrop, Mass., assignor to United Shoe Machinery Co., Paterson, N. J.

1,196,649. Rubber figure toy. L. A. Bockstahler, Cleveland, Ohio.

1,196,678. Garment supporter. L. A. Griswold, Dayton, Ohio.

1,196,680. Hose coupling. H. Handoll, London, England.

Chemical Patents will be found on page 12.

ISSUED SEPTEMBER 5, 1916.

1,196,800. Elastic strip in skirt band. B. F. Miller, Philadelphia, Pa.

1,196,817. Tube for storage battery plates having its inner part of rubber material containing finely divided lamp black and its outer part of relatively pure hard rubber. E. W. Smith, Philadelphia, Pa.

1,197,011. Combined nursing-bottle and breast pump. F. Cilino, Pueblo, Colo.

1,197,115. Submarine life-preserver. G. E. Fell and G. A. Fell, Buffalo, N. Y.; said G. E. Fell assignor to said G. A. Fell.

1,197,118. Solid tire with an inner annular opening. B. A. Godek and I. Benjamin, Paris, France.

1,197,236. Rain-proof garment. M. Schnur, New York City.

1,197,266. Syringe. J. E. Cox, assignor of one-half to J. F. Brown—both of Chicago, Ill.

1,197,312. Storage-battery separator. H. Weida, Highland Park, assignor to The India Rubber Co., New Brunswick—both in New Jersey.

1,197,368. Hose-supporter with rubber button. C. J. Hausen, New York City.

1,197,432. Cushion tire tube. R. J. Bartholomew, Lecton, Mo.

1,197,454. Diving apparatus. W. Deuter, Wells, Minn.

1,197,493. Armored tire. G. L. Hurd, Tenafly, N. J.

ISSUED SEPTEMBER 12, 1916.

1,197,587. Tire comprising a body of rubber and tread layer of fabricated fibrous material. H. R. Auld, Boston, assignor to G. E. Carr, West Roxbury—both in Massachusetts.

1,197,670. Life saving suit. F. Schlachter, Decatur, Ill.

1,197,719. Demountable wheel rim. H. E. Doebler, Cannon Falls, Minn.

1,197,768. Locking device for demountable rims. R. J. Schone, St. Charles, Mo.

1,197,805. Compression inner tube for a double tube tire. N. C. Doss, Rome, Ga.

1,197,814. Vehicle-wheel rim. F. A. Frommann, assignor to O. Frommann—both of Chicago, Ill.

1,197,823. Life saving suit. B. E. Hervey, Wallace, Idaho.

1,197,863. Gasket of rubber compound for hose couplings. E. A. Schreiber, assignor to Chicago Car Heating Co.—both of Chicago, Ill.

1,197,911. Rubber sole shoe welt of hard and soft rubber. Le B. C. Colt, assignor to National India Rubber Co.—both of Bristol, R. I.

1,197,913. Rubber sole shoe welt of hard and soft rubber. Le B. C. Colt, assignor to National India Rubber Co.—both of Bristol, R. I.

1,197,987. Pneumatic tire casing with inner supporting frame. A. Winick, Jacksonville, Fla

1,198,071. Vehicle-wheel with interposed pneumatic tube and a tire. M. C. Sharpnack, assignor of one-half to B. F. Goodwin—both of Prescott, Ariz.

1,198,104. Locking means for demountable wheel-rims. J. P. Burger, Cleveland, Ohio.

1,198,176. Massage device. L. J. Widness, New York City.

1,198,240. Tire having a tread and base of elastic rubber. A. S. Krotz, Janesville, Wis.

1,198,242. Demountable rim. U. S. Landers, Bakersfield, Calif.

1,198,287. Attachment for pneumatic tire valves. C. G. Spencer, East Orange, N. J.

1,198,317. Demountable rim for vehicle wheels. F. P. Blubaugh, Fort Scott, Kan.

1,198,366. Golf and other playing ball. P. A. Martin and J. Stanley, Birmingham, Eng.

1,198,384. Rubber bulb. T. W. Miller, assignor to The Faultless Rubber Co.—both of Ashland, Ohio.

THE DOMINION OF CANADA.

ISSUED MAY 31, 1916.

*169,190. Sleeping garment having elastic section and straps. F. J. Blenis, Valhalla, N. Y.

*169,360. Rubber sole protecting device to be adjusted to the shoe by means of clamps and straps. J. C. Hocker, Barnard, Mo.

*169,494. Inflatable horse collar. J. Baarson and A. Thorson, Odin, Minn.

*169,536. Anti-skid device. W. Grus, Jr., Chicago, Ill.

*169,595. Rectal syringe. C. A. Tyrrell, New York City.

*Denotes patents for American inventions.

Machinery and Process Patents on pages 16-17.

*169,612. Cushion heel lift. J. G. Tufford, Elyria, Ohio.
*169,647. Auxiliary tread for automobile wheel. M. W. Dadey and E. Sellberg, Winslow, Ariz.
169,669. Life saving apparatus. J. L. Edlund, Claresholm, Alberta, Canada.
*169,581. Flesh reducing garment of elastic. T. W. Rogers, Columbus, Ohio.
*169,675. Resilient wheel comprising a solid rubber tire. A. Freund, St. Louis, Mo.
*169,705. Life preserver comprising a collapsible body adapted for inflation. J. E. Lomas, Smuggler, Colo.
*169,719. Massage glove. W. R. Norton, Hightstown, N. J.
169,732. An air inflated life belt. J. Anderson-Simpson, Toronto, Ontario, Canada.
169,733. Weather strip. S. I. South, Vancouver, British Columbia, Canada.
*169,765. Hose support clamp. The Robert N. Bassett Co., Huntington, assignee of F. A. Rush, Greenwich, and H. J. Stuart, Derby—all in Connecticut.
*169,832. Cooler for pneumatic tires. P. J. Cuddihy, Rutherford, N. J.
169,847. Automobile tire. T. H. Griffiths, Toronto, Ontario, Canada.
*169,900. Rubber sheet with drainage attachment. C. English, Stalter, Howell, Mich.
*169,766. Button clasp. The Robert N. Bassett Co., Huntington, assignee of H. J. Stuart, Derby—both in Connecticut.

ISSUED JUNE 30, 1916.

169,943. Balata and leather belting. James Dawson & Son, Limited, Boultham, assignee of A. Waddington, Lincoln—both in England.
169,999. Pneumatic tire cover. P. J. Borbridge, Ottawa, Ontario, Canada.
170,018. Hose armor. H. W. Goodall, Alden, Pa.
170,020. Rubber footwear with reinforced heel. L. J. Grosky, Cleveland, Ohio.
170,029. Rubber glove. J. Hopkins, North Attleboro, Mass.
170,058. Automobile floor mat. G. F. Foss, Montreal, Quebec, Canada.
170,070. Lining for brake shoes. R. J. Stokes, Trenton, N. J.
170,081. Pneumatic tire alarm. G. F. Young, Indianapolis, Ind.
170,102. Artificial teat. Dixon Wilson, Limited, assignee of W. E. Dixon—both of Toronto, Ontario, Canada.
170,152. Composite waterproof material for shoe soles. G. F. Butterfield, West Newton, Mass.
170,192. Vehicle tire comprising a pneumatic tube and metal cover. J. P. Marois, Montreal, Quebec, Canada.
170,266. Automobile tire comprising a rim, casing and tread. J. W. Ostman and C. Gustafson, assignee of a one-third interest—both of Winnipeg, Manitoba, Canada.
170,290. Plug for rubber heels. F. Berenstein, Chelsea, Mass.
170,297. Fountain syringe. G. W. Brown, Maynard, Mass.
170,469. Artificial foot. O. L. Savitz, Allentown, Pa.
170,480. Rubber heel. J. M. Van Heusen, Boston, Mass.

THE UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

In order to give the public the advantage of having abridgments of specifications up to date while retaining their numerical sequence, applications for patents made subsequent to 1915 are given new numbers when their complete specifications are accepted, or become open to public inspection before acceptance. The new numbers start with No. 100,001 (without any indication of date) and supersede the original application numbers in all proceedings after acceptance of the complete specifications.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 9, 1916.]

5,665 (1915). Manner of joining wire rings vulcanized in the edge of pneumatic tires. G. E. Bermingham and D. Moseley & Sons, Chapelfield Works, Chapelfield Lane, Ardwick, Manchester.
*5,790 (1915). Fountain pen. W. I. Ferris, 525 Lawrence avenue, Westfield, and E. F. Britten, 21 Van Reipen avenue, Jersey City—both in New Jersey.
5,858 (1915). Wire embedded rubber sole for attachment to a shoe by means of hooks and straps. R. M. Withycombe, "Wyoming," Macquarie street, Sydney, New South Wales, Australia.
5,872 (1915). Rubber strips in saddle girths and surcingles. A. C. Gull, Serpentine, and C. Watson, Barrack street, Perth—both in Western Australia.
5,926 (1915). Sealing closure for glass containers comprising rubber gasket. E. C. R. Marks, 57 Lincoln's Inn Fields, London.
*5,933 (1915). Inflatable cushion for the stump-receiving socket of an artificial limb. A. E. Tullis, 12 Tenth street North, Fargo, N. Dak.
5,985 (1915). Waterproof overall stocking. J. W. Price, Upper Canada Apartments, Lonsdale Road, and R. H. Howard, 13 Ferndale avenue—both in Toronto.
100,642. Segmental tire. P. E. van Berendonck, 38 Avenue Jeanne, Brussels.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 16, 1916.]

*6,000 (1915). Sock suspenders. G. B. Glidden, Centre street, Dighton, Mass.
6,255 (1915). Wheel tire with hard rubber tread. W. Freakley, 86 Wellesley street, Shelton, Stoke-on-Trent, and H. Aynsley, Portland House, Blythe Bridge—both in Staffordshire.
*6,281 (1915). Puncture proof band to be secured to the inner side of a tire. C. V. Roberts, Ocala, Fla.

* Denotes patents for American inventions.

6,337 (1915). Rubber handles for tennis rackets, etc. B. C. Bart, 319 Kingston Road, Merton Park, Wimbledon, Surrey.
100,734. Cover for preventing bursting of a diving dress when inflated. H. Dragerwerk and B. Drager, 53 Moislinger Allee, Lubeck, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 23, 1916.]

6,390 (1915). Window fly-screen comprising a strip of rubber. S. Brentnall, 150 Drake street, Rochdale, Lancashire.
6,465 (1915). Sleeping-bag comprising an outer waterproof casing. N. Richardson, 17 Finsbury Court, Finsbury Pavement, London.
6,487 (1915). Fountain pen having a collapsible ink sac. C. Pressland, "The Sub," Hampton-on-Thames, Middlesex.
6,557 (1915). Toy submarine comprising two elastic bulbs. A. G. Jones, 5 Acacia Road, Norbury, London.
6,570 (1915). Fountain pens. A. Munro, 117 Birchfield Road, Handsworth, Birmingham.
6,583 (1915). Solid tire with rubber cushions. A. D. Macropoulos, 15 Great St. Helens, London.
6,585 (1915). Helmet with rubber securing bands. M. C. Favre, Neuilly-sur-Seine, Paris.
100,755. Pneumatic arm-pit supports for the heads of crutches. F. A. Pennington, 10 Halesden Road, Heaton Chapel, Stockport, Cheshire.
100,759. Tread bands for wheel tires. H. M. Hillman, 743 McMillan avenue, and J. Schwab, 434 Stradbrooke avenue—both in Winnipeg, Canada.
100,764. Rubber ends for wire garment stiffeners. F. Kleemann, 23 Moor Lane, London.
100,786. Segmental cover for pneumatic tires. P. E. van Berendonck, 38 avenue Jeanne, Brussels.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 30, 1916.]

6,866 (1915). Wristlets of elastic and elastic webbing. J. P. N. Casey, 44 Bloomsbury street, London.
*6,987 (1915). Armored tread for pneumatic tires. A. Gorecki, 144 Coit street, Buffalo, N. Y.
7,085 (1915). Rubber lining for cavities in closet seats. O. Imray, 29 Southampton Buildings, London.
7,148 (1915). Rubber ring for washing plunger. E. A. Cloud, 9 Stile Hall Mansions, Chiswick, London.
7,163 (1915). Vulcanite cigarette holder. H. E. Collett, Lombard Lane, Pleydell Court, Fleet street, London.
*100,811. Spring wheel with rubber ring and rope tread. M. Chupka, 164 Vaughan street, Johnstown, Pa.
*100,838. Metallic inner tube. W. F. Stewart, 706 Park avenue, Pekin, Illinois.

NEW ZEALAND.

36,411. Pneumatic tire. E. W. B. Carey, Auckland, N. Z.
37,436. Rubber heel and sole. T. H. Robinson, 2 Grosvenor place, off Drummond street, Carlton, Vic.

ISSUED JULY 6, 1916.

37,383. Pneumatic tire. M. S. Stevenson, 119 Victoria street, Westminster, London, England.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

479,886 (March 2, 1915). Armored tire without air tube, for vehicle wheels. A Masetti Zannini.
479,891 (September 29). Elastic wheel for vehicles. E. Haussmann.
479,895 (September 30). Improvements in buffer springs, tractor springs and others, made with rubber. F. Spencer.
479,897 (September 30). Rubber heel. The Goodyear Tire & Rubber Co.
479,906 (October 2). Pneumatic tire. Reliance A. C. Co., Inc.
479,969 (October 8). Air chamber for pneumatic tires. H. C. Boggs.
479,981 (October 11). Wheel with pneumatic tire for vehicle wheels. W. H. Burritt.
479,988 (October 12). Improvements in the manufacture of pneumatic tires. H. Agha.

TRADE-MARKS.

THE UNITED STATES.

64,341. The word EFFICIENCY—hose, tubing, belting, gaskets, valves, packing. Imperial Rubber Co., New York City.
79,119. The word NARCO—waterproofing composition for inner tubes, patches, and rubber repair stock generally. National Rubber Co., St. Louis, Mo.
96,128. An illustration of the words STUCK-TITE—tire patches. Auto Supply Manufacturing Co., Eau Claire, Wis.
96,291. The words RELIANCE DE LUXE—water bottles, fountain syringes, etc. The Faultless Rubber Co., Ashland, Ohio.
96,484. The letter S with the letters TERILI within—syringes, etc. B. F. Calley, Denver, Colo.
96,772. The word HALLMARK—fountain pens and parts thereof. The United Jewelers Inc., New York City.
71,150. Illustration of a high boot, the narrow upper band colored red—rubber boots, rubber shoes, rubber shoepacks, and rubber shoes with leather tops. The B. F. Goodrich Co., New York City and Akron, Ohio.
96,213. The word PEARL—golf and other playing balls. Martins Birmingham, Limited, Birmingham, England.
96,403. An illustration within a circle, of a boy protecting himself in a shower with rubber matting—rubber matting. The Federal Rubber Co., Cudahy, Wis.

89,981. The representation of a section of packing on which is arranged the word CHANELCO—rubber and rubber and fiber packings for the piston rods of engines and pumps. R. L. Henry, New York City.

96,534. The word STAG—automobile tires, inner tubes, etc. Times Square Automobile Co., New York City.

96,559. The word TRAFFIK—tire treads. The Federal Rubber Co., Cudahy, Wis.

96,821. The word INTERNATIONAL—belting, made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,822. The word DREADNAUGHT—belting, hose and machinery packing made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,823. The word KORTLANDT—belting, hose and machinery packing made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,824. The word CENTAUR—belting and hose made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,825. The word PROSPECTOR—belting made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,827. The word YEOMAN—belting made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,835. The work VIKING—hose and machinery packing made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,838. The words WHITE JACKET—hose made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,839. The word MOHICAN—machinery packing made partly of rubber and partly of cotton. The Manhattan Rubber Manufacturing Co., New York City.

96,840. The words "GOLDEN FLEECE"—machinery packing made of flax. The Manhattan Rubber Manufacturing Co., New York City.

96,841. The word CARDINAL—brakelining made partly of asbestos and partly of rubber, and machinery packing made of composite rubber. The Manhattan Rubber Manufacturing Co., New York City.

96,842. The word RAVEN—composite rubber packing. The Manhattan Rubber Manufacturing Co., New York City.

96,843. The word HEADLIGHT—machinery packing made partly of flax and partly of rubber. The Manhattan Rubber Manufacturing Co., New York City.

64,341. The word EFFICIENCY—mechanical rubber goods. Imperial Rubber Co., New York City.

91,088. The word NURSWEL—nursing-nipples. The Vant Woud Rubber Co., Brooklyn, N. Y.

96,693. The word PEN-E-ZIP—toy balloons. The Miller Rubber Co., Akron, Ohio.

96,803. An illustration of a shield with the monogram THE R. P. Co.—seamless fountain syringes and no seam water-bottles. The Rubber Products Co., Barberton, Ohio.

90,288. The words "GRAFINITE" TUBE—inner tubes or air tubes for vehicle tires.

95,043. The word KELMAN—asbestos, metal, rubber and cotton machinery packing; belting and hose. R. Kelly, New York City.

95,675. The word WONDERLIFT—abdominal belts made of rubber, cloth, and combinations of rubber and cloth. Kops Bros., New York City.

95,942. The word NAUGASOLE—boots and shoes having rubber or composition rubber and fiber soles attached thereto by vulcanization. The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn.

96,505. The word BRIGHTON—suspenders, belts and armbands. Pioneer Suspender Co., Philadelphia, Pa

THE DOMINION OF CANADA.

*21,723. The word PORTAGE—rubber tires. The Portage Rubber Co., Barberton, Ohio.

21,746. The words GAME BRAND and the representation of a partridge—soft rubber goods, such as vehicle tires, tire tubes, water bottles, tobacco pouches, etc. The F. E. Partridge Rubber Co., Montreal, Quebec, Canada.

*21,780. The word "SILVAREIGN"—waterproof fabrics and waterproof garments. C. Kenyon Co., Brooklyn, N. Y.

THE UNITED KINGDOM.

371,437. The words JOHN BULL—rubber erasers. St. Mungo Manufacturing Co., Govan, Glasgow.

371,648. The word KUTSPIN—golf balls, golf clubs and golf bags. Wood-Milne, Limited, Ribble Banks Mills, Preston, Lancs.

371,658. Two concentric circles traversed by an arrow and bearing the words "TRADE-MARK" and "WOOD-MILNE"—pumps and tire inflators; artificial leather for soles and heels of boots and shoes; tire inner tubes; tips, pads for boots and shoes; all made of rubber. Wood-Milne, Limited, Ribble Banks Mills, Preston, Lancs.

372,101. The word PETRIX—vulcanized rubber sheets, springs, washers, valves, buffers and similar goods. Anderson, Anderson & Anderson, Limited, 35 Saint Paul's Churchyard, London, E. C.

372,102. The word RUBBEX—goods manufactured of rubber and gutta percha. Anderson, Anderson & Anderson, Limited, 35 Saint Paul's Churchyard, London, E. C.

372,103. The word VULKEX—vulcanized rubber sheets, springs, washers, valves, buffers and similar goods. Anderson, Anderson & Anderson, Limited, 35 Saint Paul's Churchyard, London, E. C.

372,122. The word WIZARD—apparatus for vulcanizing tires. J. B. Auto-Specialities Co., Croyden, Surrey.

*Denotes Trade-Marks Owned by American Companies.

372,161. The word SOLAX—balata material to be employed in the manufacture of soles for boots and shoes. Norman Isherwood & Co., Limited, Bolton, Lancs.

372,193. The word REGENT—balata goods, not including tires and belting. Cohen & Wilks, Cheetham, Manchester.

372,727. The word CLINCHER—all rubber goods included in class 9. The North British Rubber Co., Limited, Castle Mills, Edinburgh.

372,837. The word BALCOT—balata belting. The Manchester Balata Belting Co., Limited, Liverpool.

THE FRENCH REPUBLIC.

54. A cannon with the figure *75*—rubber tobacco pouches. Eugène Ropp, Baume-les-Dames.

16,875. A banner placed horizontally and made up of the several flags of the Entente Allies. Madam Rose Ducassou, Marseille.

16,896. The figures *14-15*—rubber goods. Marie Louise Faret, Marseille.

16,897. The figures *1914-1915*—*Same.*

16,898. The figure *14*— *Same.*

16,899. The figure *1914*— *Same.*

16,921. The words Y-A-BON—rubber goods. Ferdinand Guiraud, Marseille.

16,922. The word PACIFIC— *Same.*

16,923. The word MAGARD— *Same.*

16,924. The word ATLANTIC— *Same.*

16,925. The words SAINT JAMES—*Same.*

17,120. The word RIVIERA— *Same.*

17,121. The word ELITE— *Same.*

17,122. The word VICTOIRE— *Same.*

17,123. The word TOURISTE— *Same.*

17,124. The word CANNEBIERE— *Same.*

17,125. The word JOLIETTE— *Same.*

17,126. The word TOMMY— *Same.*

17,127. The word STANDARD— *Same.*

17,128. The word BUFFALO— *Same.*

17,129. The word TIPPERARY— *Same.*

17,130. The word STAR— *Same.*

17,131. The word SIMPLEX— *Same.*

17,132. The word DAISY— *Same.*

17,134. The word DERBY— *Same.*

23,794. The word DAINTY—dress shields containing rubber. Kirby, Beard & Co., Birmingham, England.

23,817. The word BELSOL—fabrics, elastic bandages, etc., made part in rubber or gutta percha, part in textiles or fibers, tires, garments, footwear, packings, etc. Ernest Hilder Godbold, London, England.

*23,975. The name CHAIN TREAD encircled by a chain—rubber footwear. The United States Rubber Co., New York City.

159,702. The words DES POILUS—rubber goods. Roger Mesnil, Paris.

159,706. The words WATER-C. TH.-FROOF—paste for proofing fabrics and paper. Camille Therm, Paris.

159,865. The name LA JOFFRETTE—rubber tobacco pouches. Joseph Buret, Paris.

159,982. The name LE PARALO—fabric-proofing powder. B. Globa Mikhallenko, Paris.

159,995. The words CROIX DE GUERRE—rubber goods. Louis Moreau, Paris.

160,096. The words LA VALEUR MILITAIRE—*Same.*

160,195. The name LE TUYAU—collapsible rubber funnel for pouring gasolene into tanks of motor vehicles or aeroplanes. Société Lorraine des Anciens Établissements Diétrich et Cie., de Lunéville, Paris.

160,361. The words THE RUBBER WORKS LD.—rubber goods. Veuve Kasner, Paris.

160,479. A revolvable rubber heel with the words PAPILLON NOIR SUPÉRIEUR—rubber heels. Alfred Mulard, Paris.

161,560. A half-moon surmounting a comet—rubber goods. Société des Établissements Bognier et Burnet, Paris.

161,564. A revolvable rubber heel bearing the words WALK FAIR SPECIAL—rubber heels. Marcel Duval, Paris.

161,565. A revolvable rubber heel bearing the words WALK FAIR FIRST QUALITY—*Same.*

DESIGNS.

THE UNITED STATES.

49,534. Tire. H. S. Blynt, Washington, D. C.

49,535. Vehicle tire. A. H. Boyd, Aspinwall, Pa., assignor to The Porter Rubber Co., Salem, Ohio.

49,543. Rubber vehicle tire. S. G. Lewis, Greensburg, assignor to Pennsylvania Rubber Co., Jeannette—both in Pennsylvania.

49,550. Mat. J. Scherner, Milwaukee, assignor to Federal Rubber Manufacturing Co., Cudahy—both in Wisconsin.

49,556. Tire tread. R. G. Wooten, Toronto, Ontario, Canada.

49,573. Shoe. Le Baron C. Colt, assignor to National India Rubber Co.—both of Bristol, R. I.

49,590. Tire tread. W. S. Wolfe, Akron, Ohio.

49,607. Tire tread. H. A. Githens, Milwaukee, assignor to The Federal Rubber Co., Cudahy—both in Wisconsin.

49,645. Tire tread. C. C. Gates, assignor to The International Rubber Co.—both of Denver, Colo.

PRINTS.

4,440. "U. S. RUBBER SYSTEM." (For Wearing-Apparel and Rubber Products.) United States Rubber Co., New Brunswick, N. J.

Review of the Crude Rubber Market.

Copyright, 1916.

NEW YORK.

THE demand for crude rubber during September has not been large enough in volume to affect the steady market conditions that have generally prevailed. The arrivals have been heavy this month in comparison to August receipts, which were small, due to the delays in transit and congested shipping. Guaranteed deliveries from London are placed at 40 days, and from the Far East three or four months are required. It would seem that under these prevailing conditions a large and immediate demand could not be supplied. There has been a fair demand for plantations, and the tone of the market is steady, with fluctuating prices, First latex showing a gain of about 3 cents during the month. The theory that the large buyers are in control is supported by advanced quotations when orders are placed in London. Upriver fine has been the feature of the month. The shortage is evident, despite the heavy arrivals. Spot prices have fluctuated from 70 cents to as high as 75 cents within the month, and on September 29 the figure was 73 cents in an easier market. Futures were quoted: October-November, 71 cents; November-December, 70 cents.

According to official figures recently issued by the Department of Commerce, 119,542 tons of crude rubber were imported into the United States during the fiscal year ended June 30, 1916, as compared with 76,816 tons in 1915 and 58,926 tons in 1914.

LONDON.

The steady increase of stocks and the approaching period of heaviest arrivals would forecast easier conditions in London. The cost to holders may necessitate their unloading, which undoubtedly would be followed by weak market conditions. The cause of these accumulations is said to be the refusal of producers to sell forward. Price advances have not been followed up, as buyers are satisfied to take chances with a large crop in view. There is some speculation as to accumulated supplies available from East Africa, which has recently become a British possession.

On September 5 the market was firm and quiet, Standard crêpe being quoted at 53 cents and smoked sheet 52½ cents. Steady and quiet conditions prevailed during the month, and on September 25 Standard crêpe was 57 cents and Smoked sheet 56½ cents.

PARA AND MANAOS.

The trade has been elated over the upward movement of Upriver fine that featured the September market. Later in the month prices eased off, but the scarcity of stocks, particularly Upriver fine, was still apparent. The actual cause of this movement is unknown; however, there are certain facts which undoubtedly have been generally effective. For instance, the rivers were abnormally low and supplies consequently delayed. Russia has been in the market for considerable supply. The production of Caucho has increased and Upriver fine has decreased during the year, as is indicated by the following table:

PARA ARRIVALS FOR AUGUST, 1915-16.

	August, 1915.	August, 1916.
Islands, fine ..... *tons*	412	404
Upriver, fine	1,313	1,176
Caucho	315	420
Totals	2,240	2,300

SINGAPORE.

At the auction held September 1, 8, 15 and 24 about 1,500 tons were sold. First latex crêpe brought an average of 51 cents and Smoked sheet 51½ cents a pound.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and September 29, the current date:

PARA.	Oct. 1, 1915.	Sept. 1, 1916.	Sept. 29, 1916.
Upriver, fine new	54½@55	69 @	73 @
Upriver, fine, old	56 @57	.....	.....
Islands, fine, new	50 @51	58 @	65 @
Islands, fine, old	52 @	.....	.....
Upriver, coarse, new	41½@42	41½@	43½@
Upriver, coarse, old	43 @	.....	.....
Islands, coarse, new	26 @27	28 @	30 @
Islands, coarse, old	28 @	.....	.....
Cametá	27½@28	33 @	32 @
Caucho, ball, upper	42½@	41½@	44 @
Caucho, ball, lower	40 @41	36 @	41 @
PLANTATION.			
First latex crêpe { Spot.. / Afloat	59½@60 / 59½@60	{ Spot... / Futures 56½@ / 57 @	60 @ / 60 @
Amber crêpe, light	.....	{ Spot... / Futures 55 @ / 55 @	57½@ / 57½@
Brown crêpe, clean	.....	{ Spot... / Futures 52 @ / 51½@	54 @ / 54 @
Smoked sheet, ribbed { Spot.. / Afloat	59½@ /	{ Spot... / Futures 56¼@ / 56½@	59½@ / 59½@
Fine sheets and biscuits, unsmoked	57 @57¼	.....	.....
CENTRALS.			
Corinto	39 @40	39 @	42 @
Esmeralda, sausage	38½@39	39 @	41½@
Nicaragua, scrap	38 @	38 @	41 @
Mexican plantation, sheet	.....	.....	46 @52
Mexican, scrap	39 @40	.....	40 @
Mexican, slab	.....	.....	31 @
Manicoba	33 @36	42½@45	42½@
Mangabeira sheet	32 @38	37½@	37½@
Guayule	26 @30	32 @33	32 @33
Balata, sheet	51 @52	79 @	73½@
Balata, block	43 @	50 @	65 @
AFRICAN.			
Lopori, ball, prime	52 @53	52 @	50 @
Loperi, strip, prime	.....	52 @	51 @
Upper Congo, ball, red	50 @57	51 @	51 @
Rio Nunez Niggers	53 @53½	53 @	54 @
Conakry Niggers	51 @52	52 @	52 @
Massai, red	51 @52½	51 @	52½@
Soudan, Niggers	44 @45	50 @51	50 @
Cameroon, ball, soft	.....	.....	.....
Cameroon, ball, hard	.....	.....	.....
Benguela, No. 2 Superior	31 @32	38 @	38 @
Benguela, No. 2	.....	35 @	34½@35
Accra, flake	24 @25	35 @	28 @
EAST INDIAN.			
Assam	45 @47	38 @	38 @
Pontianak	6¾@ 7	6½@	8¼@
Gutta Siak	11¾@12	17 @	13 @
Gutta red Niger	.....	25 @	26½@
Borneo III	.....	.....	.....
Gutta Percha, red Macassa	2.00@2.40	1.50 @2.50	1.60 @

MARKET CABLE SERVICE FROM LONDON.

The following market report has been cabled from Aldens' Successors, Limited, London:

Date.	Standard Crêpe.	Smoked Sheet.	Market.
September 5 ..... *cents*	53	52½	Steady.
September 11	53½	53	Steady.
September 18	57½	57	Quiet.
September 25	57½	56½	Quiet and steady.

MARKET CABLE SERVICE FROM SINGAPORE.

The following reports of the weekly auctions held at Singapore have been cabled by The Waterhouse Co., Limited:

Date.	Crêpe, Price per lb.	Smoked Sheet, Price per lb.	Pounds Sold.	Market.
Sept. 1..*cents*	49.7	50.1	855,680	Holders less anxious to sell.
Sept. 8.....	50.5	51.0	795,200	Closed strong.
Sept. 15.....	51.0	51.0	826,560	Good demand for all descriptions.
Sept. 22.....	53.7	54.2	795,200	Active at the advance.

COMPARATIVE NEW YORK PRICES FOR SEPTEMBER.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows:

"A good demand for Commercial Paper in the rubber line has continued this month, the best names going at 4¼@4½ per cent., and those not so well known 5@5½ per cent.; city and out-of-town banks buying."

	1916.*	1915.	1914.
Upriver, fine	$0.69@0.74	$0.55@0.57	$0.64@0.78
Upriver, coarse	.41@ .44	.41@ .43	.43@ .55
Islands, fine	.58@ .62	.49@ .51	.53@ .70
Islands, coarse	.28@ .30	.26@ .27	.27@ .35
Cametá	.32@ .33	.28@ .30	.29@ .36

*Figured only to September 25.

SINGAPORE.

GUTHRIE & CO., LIMITED, report [August 16, 1916]:

At the auction held today prices declined on the average about $6 per picul. Demand throughout was fair and of a quantity of 527 tons cataloged for sale 253 tons found buyers.

Standard sheet and crêpe each sold up to $115 and at this figure mark declines of $7 and $6 respectively. Plain smoked sheet met with a poor inquiry and only a few parcels were sold. Brown and lower grade crêpes were in fairly good demand, but prices were about $5 lower on the week. Scraps were neglected.

The following was the course of values:

	In Singapore per picul.*	Sterling equivalent per pound in London.	Equivalent per pound in cents.†
Sheet, fine ribbed, smoked	$113@115	2/ 3⅛@2/ 3⅜	55.24@56.00
Sheet, good ribbed smoked	110@112	2/ 2⅜@2/ 3	53.97@54.73
Sheet, plain smoked	101@108	2/ 0⅜@2/ 2⅛	50.17@52.95
Sheet, ribbed unsmoked	97@ 98	1/11⅞@2/ 0⅛	48.39@48.90
Sheet, plain unsmoked	100@103	2/ 0½@2/ 1⅛	49.66@50.93
Crêpe, fine pale	113@115	2/ 3¼@2/ 3⅝	55.24@56.00
Crêpe, good pale	105@111	2/ 1½@2/ 2¾	51.70@54.22
Crêpe, fine brown	102@106	2/ 0⅞@2/ 1¾	50.42@52.20
Crêpe, good brown	88@101	1/10 @2/ 0¾	44.60@50.17
Crêpe, dark	71@ 94	1/ 6⅜@1/11¼	37.24@47.13
Crêpe, bark	60@ 87	1/ 4⅛@1/ 9¼	32.68@44.09
Scrap, virgin	70@ 86	1/ 6¾@1/ 9½	36.99@43.58
Scrap, pressed	50@ ..	1/ 2 @.....	28.38@.....
Scrap, loose	50@ 76	1/ 2 @1/ 7½	28.38@39.53

*Picul = 133⅓ pounds.
†Figured at standard rate of exchange, 1s. = 24.3 cents.
Quoted in S. S. dollars = 2/4 [56.7 cents].

PLANTATION RUBBER FROM THE FAR EAST.

TOTAL EXPORTS FROM MALAYA.

(From January 1, 1916, to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	From Singapore. July 31, 1916.	From Malacca. June 30, 1916.	From Penang. June 30, 1916	From Port Swettenham. July 21, 1916.	Totals.
United Kingdom..*lbs.*	17,765,687	3,442,134	10,992,434	12,810,976	45,011,231
The Continent	7,256,905	.....	46,667	.....	7,303,572
Japan	2,572,014	.....	.....	.....	2,572,014
Ceylon	267,963	.....	334,933	771,219	1,374,115
United States	47,692,888	.....	4,489,733	.....	52,182,521
Australia	184,314	.....	.....	.....	184,314
Totals	75,739,771	3,442,134	15,863,767	13,582,195	108,627,767
For same period, 1915	40,042,540	4,329,778	12,621,996	16,320,300	73,314,614
For same period, 1914	24,175,230	2,548,819	10,407,734	15,034,312	52,166,095
For same period, 1913	13,938,262	.....	6,988,266	14,340,559	35,267,087

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to August 21, 1915 and 1916. Compiled by the Ceylon Chamber of Commerce.)

To—	1915.	1916.
United States *pounds*	8,832,981	16,604,590
Canada and Newfoundland	340,140	6,720
France	234,272	981,318
Russia	332,200	248,874
Italy	.....	6,720
United Kingdom	15,105,247	13,030,127
Australia	459,577	605,571
India	1,000	728
Straits Settlements	119,933	.....
Japan	223,749	194,389
Totals	25,649,099	31,679,037

FEDERATED MALAY STATES RUBBER EXPORTS.

An official cablegram from Kuala Lumpur gives the figures of the export of plantation rubber from the Federated Malay States during the month of August as 5,782 tons against 5,053 tons in July last and 3,796 tons in the corresponding month last year. This gives a total of 37,926 tons for eight months of the current year against 26,673 tons in 1915 and 18,671 tons in 1914. Appended are the comparative statistics:

	1914.	1915.	1916.
January *tons*	2,542	3,473	4,471
February	2,364	3,411	5,207
March	2,418	3,418	4,429
April	2,151	2,777	3,914
May	2,069	2,708	3,956
June	2,306	3,403	5,114
July	2,971	3,687	5,053
August	1,850	3,796	5,782
Totals	18,671	26,673	37,926

IMPORTS AND EXPORTS OF RUBBER AND GUTTA AT SINGAPORE.

IMPORTS.

From—	July, 1916. Para Rubber. Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Malay Peninsula—					
Port Swettenham..*pounds*	1,363,466	.....	.....	.....	.....
Muar	696,266	.....	.....	.....	.....
Teluk Anson	663,200	9,066	.....	.....	.....
Kelantan	118,433	5,600	.....	.....	.....
Port Dickson	102,666	.....	.....	.....	.....
Kuantan	41,866	.....	.....	.....	.....
Rengat	12,533	14,666	.....	.....	.....
Mersing	4,266	.....	.....	.....	.....
Trengganu	133	.....	.....	.....	.....
Totals	3,002,829	29,332	.....	.....	.....
Borneo—					
Sarawak	83,866	35,066	1,600	32,933	603,600
Pontianak	39,200	5,066	3,600	14,666	46,533
Sibu	38,133	.....	1,733	4,933	321,600
Sambas	33,200	.....	.....	800	52,000
Labuan	26,666	.....	266	2,800	161,333
Jesselton	22,800	94,533	266	533	.....
Bandiermassin	16,400	32,263	5,333	9,333	66,666
Sandakan	15,200	15,333	800	.....	266
Kudat	4,533	21,466	.....	266	.....
Singkawang	3,066	.....	.....	800	.....
Passir	2,800	.....	.....	.....	.....
Samarinda	1,330	.....	.....	3,333	.....
Sampit	400	.....	400	1,200	.....
Totals	287,594	203,727	13,998	71,597	1,251,998
Sumatra—					
Deli	146,533	459,200	.....	.....	.....
Djambi	132,000	.....	.....	2,400	.....
Asahan	54,000	80,666	.....	.....	.....
Belawan	12,533	66,666	.....	.....	.....
Siak	7,600	.....	.....	.....	.....
Indraghiri	5,066	.....	.....	.....	.....
Palembang	3,466	.....	933	.....	404,000
Bengkalis	532	.....	.....	.....	.....
Muntok	400	.....	.....	.....	.....
Port Bon	.....	.....	800	3,600	20,666
Totals	362,130	606,532	1,733	6,000	424,666
Straits Settlements—					
Malacca	1,068,933	593,266	.....	.....	.....
Penang	552,066	51,333	.....	.....	.....
Totals	1,620,999	644,599	.....	.....	.....
Java—					
Sourabaya	96,933	.....	.....	.....	.....
Batavia	75,600	.....	.....	.....	.....
Totals	172,533	.....	.....	.....	.....
Siam—					
Patani	1,330	.....	.....	.....	.....
Bangkok	133	.....	.....	.....	.....
Totals	1,463	.....	.....	.....	.....
Burma—					
Mergui	2,933	.....	.....	.....	.....
Other Ports	158,533	189,600	5,866	10,666	111,200
Grand Totals	5,609,014	1,673,790	21,597	88,263	1,787,864

EXPORTS.

To—	July, 1916. Para Rubber. Para Rubber.	Para Rubber Transhipped.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
North America:					
United States—					
New York..*pounds*	2,919,866	610,600	.....	58,933	761,600
Akron	2,271,466	136,000	.....	.....	.....
Seattle	428,133	30,933	.....	.....	73,866
San Francisco	31,466	29,066	.....	.....	29,333
Boston	4,533	.....	.....	.....	60,000
Canada—					
Ontario (Toronto)	34,133	.....	.....	.....	.....
Totals	5,689,597	806,599	.....	58,933	924,799
Europe:					
United Kingdom—					
England—					
London	976,533	2,030,533	.....	390,400	205,866
Liverpool	305,200	173,733	.....	46,933	204,133
Russia (Vladivostok)	417,333	.....	.....	.....	22,400
France (Marseilles)	146,000	.....	24,133	12,533	.....
Totals	1,845,066	2,204,266	24,133	449,866	432,399
Grand Totals	7,534,663	3,010,865	24,133	508,799	1,357,198

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

[The Figures Indicate Weights in Pounds.]

SEPT. 1.—By the steamer *Stephen* from Pará and Manaos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown	40,800	25,700	79,300	33,700=	179,500
Davies, Turner & Co.	390,800	10,400	60,400	61,400=	523,000
General Rubber Co.	124,500	10,400	93,300	.....=	228,200
H. A. Astlett & Co.	81,700	46,800	58,500	5,500=	192,500
Arnold & Zeiss.	138,100	18,700	30,400	3,100=	190,300
Paul Bertuch	116,100	1,400	15,800	25,000=	158,300
Henderson & Korn	9,800	700	64,900	1,700=	77,100
G. Amsinck & Co.	15,000	700	22,700	2,500=	40,900
Robinson & Co	43,700	.....	.....	.....=	43,700
Totals	960,500	114,800	425,300	132,900=	1,633,500

SEPT. 1.—By the steamer *Stephen* from Itacoatiara:

G. Amsinck & Co.	24,300	.....	11,500	.....= 35,800

SEPT. 5.—By the steamer *Rio de Janeiro* from Pará and Manaos:

Meyer & Brown	126,300	22,900	11,700	83,500=	244,400
Davies, Turner & Co.	285,800	14,200	18,700	18,400=	336,600
Arnold & Zeiss.	37,700	2,800	29,300	1,700=	71,500
Muller, Schall & Co.	29,600	3,400	6,300	11,200=	50,500
Paul Bertuch	26,600	3,200	14,000	.....=	43,800
Crossman & Sielcken.	8,200	.....	.....	.....=	8,200
Neuss, Hesslein & Co.	21,200	.....	3,300	16,900=	41,400
G. Amsinck & Co.	3,900	.....	1,700	33,800=	39,400
H. A. Astlett & Co.	15,000	.....	13,000	3,300=	31,300
Hagemeyer & Brunn.	21,100	800	5,200	2,900=	30,000
W. R. Grace & Co.	6,600	.....	.....	800=	7,400
Birdsong Bros. & Co.	.....	.....	1,900	100=	2,000
Totals	581,500	47,300	105,100	172,600=	906,500

PARAS.

		Pounds.
AUGUST 23.—By the *Colon*=Colon:		
G. Amsinck & Co. (Caucho)	28,000	
G. Amsinck & Co. (Coarse)	6,400	
W. R. Grace & Co. (Caucho)	12,000	
W. R. Grace & Co. (Fine)	1,500	
A. Gibbs & Co. (Fine)	2,200	
A. Gibbs & Co. (Coarse)	400	
Eastmond & Co. (Caucho)	3,000	53,500
AUGUST 28.—By the *Montanan*=Buenos Aires:		
Muller, Schall & Co. (Fine)	60,000	
Muller, Schall & Co. (Coarse)	15,000	75,000
AUGUST 28.—By the *Kentuckian*=Montevideo:		
A. D. Straus & Co. (Fine)		7,000
SEPTEMBER 1.—By the *Panaman*=Buenos Aires:		
Various (Fine)		16,000
SEPTEMBER 5.—By the *Ancon*=Colon:		
G. Amsinck & Co. (Fine)	21,000	
G. Amsinck & Co. (Coarse)	3,000	
W. R. Grace & Co. (Fine)	3,000	
Gravenhorst & Co. (Fine)	1,700	28,700
SEPTEMBER 7.—By the *Highland Prince*=Rio Janeiro:		
W. R. Grace & Co. (Fine)		4,000
SEPTEMBER 11.—By the *Hawaiian*=Buenos Aires:		
Neuss, Hesslein & Co. (Fine)		2,000
SEPTEMBER 19.—By the *Cristobal*=Colon:		
G. Amsinck & Co. (Fine)	28,500	
W. R. Grace & Co. (Fine)	1,500	30,000
SEPTEMBER 20.—By the *Colon*=Colon:		
G. Amsinck & Co. (Caucho)	30,000	
Muller, Schall & Co. (Caucho)	21,000	
Eastmond & Co. (Caucho)	31,000	82,000

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

AUGUST 23.—By the *Colon*=Colon:		
J. Brown	2,000	
Isaac Brandon & Bros.	700	2,700
AUGUST 25.—By the *Santa Marta*=Cartagena:		
A. Held	2,000	
G. Amsinck & Co.	200	2,200
AUGUST 28.—By the *Metapan*=Port Limon:		
Isaac Brandon & Bros.	700	
De Lima, Cortessoz & Co.	800	1,500
AUGUST 30.—By the *Iallac*=Frontera:		
Harburger & Stack	13,000	
G. Amsinck & Co.	1,200	
E. Steiger & Co.	800	15,000
AUGUST 31.—By the *Advance*=Colon:		
Piza Nephews & Co.	2,000	
Fidanque Bros. & Co.	500	2,500
SEPTEMBER 1.—By the *Juan*=Colombia:		
Mecke & Co.		1,000
SEPTEMBER 1.—By the *Jove*=Colombia:		
A. Held		2,000
SEPTEMBER 5.—By the *Pastores*=Port Limon:		
Isaac Brandon & Bros.		500
SEPTEMBER 5.—By the *Monterey*=Mexico:		
Graham, Hinkley & Co.		*1,000
SEPTEMBER 5.—By the *Monterey*=Tampico:		
C. Tennent, Sons & Co.		*25,000

		Pounds.
SEPTEMBER 5.—By the *Ancon*=Colon:		
G. Amsinck & Co.	12,000	
Pablo Calvet & Co.	12,000	
A. M. Capen's Sons.	10,000	
American Trading Co.	2,000	
A. Rosenthal & Sons.	500	36,500
SEPTEMBER 5.—By the *Tivives*=Cortez:		
A. Rosenthal & Sons.	4,000	
J. S. Sembrada & Co.	1,500	
Neuss, Hesslein & Co.	200	
G. Amsinck & Co.	100	5,800
SEPTEMBER 6.—By the *El Monte*=New Orleans:		
Various		7,000
SEPTEMBER 7.—By the *Allianca*=Colon:		
Mecke & Co.	1,500	
M. A. de Leon & Co.	1,500	3,000
SEPTEMBER 12.—By the *Calamares*=Port Limon:		
Isaac Brandon & Bros.		500
SEPTEMBER 15.—By the *Carrillo*=Cartagena:		
G. Amsinck & Co.	10,000	
A. Held	1,000	11,000
SEPTEMBER 18.—By the *Esperanza*=Mexico.		
E. Steiger & Co.	27,000	
General Export & Commission Co.	2,500	
H. Marquardt & Co.	2,000	
W. A. Aves & Co.	1,500	
German Commercial Co.	500	33,500
SEPTEMBER 18.—By the *Siraola*=Cortez:		
Eggers & Heinlein.	3,000	
A. Rosenthal & Sons.	3,500	
R. G. Barthold.	100	3,600
SEPTEMBER 18.—By the *Tenadores*=Port Limon:		
Isaac Brandon & Bros.	400	
Eggers & Heinlein.	100	500
SEPTEMBER 18.—By the *Jelling*=Mexico:		
J. A. Medina & Co.	7,000	
G. Amsinck & Co.	1,000	8,000
SEPTEMBER 19.—By the *Cristobal*=Colon:		
G. Amsinck & Co.	25,000	
A. M. Capen's Sons.	2,700	
W. R. Grace & Co.	3,000	
Pablo Calvet & Co.	3,500	
American Trading Co.	2,600	
Muller, Schall & Co.	800	
Meyer Hecht	300	
R. G. Barthold.	1,400	
H. Wolff & Co.	1,100	
Neuss, Hesslein & Co.	1,700	
Harburger & Stack.	500	
A. Rosenthal & Sons.	400	
Gontard & Co.	600	43,600

AFRICANS.

SEPTEMBER 1.—By the *Carpathia*=Liverpool:	
Arnold & Zeiss.	38,000
SEPTEMBER 5.—by the *Cloughton*=London:	
J. T. Johnstone & Co.	11,000
SEPTEMBER 11.—By the *Orduna*=Liverpool:	
Arnold & Zeiss.	20,000
SEPTEMBER 18.—By the *Francisco*=Hull:	
J. T. Johnstone & Co.	25,000
Arnold & Zeiss.	3,000 28,000
SEPTEMBER 18.—By the *Laconia*=Liverpool:	
Fred. Stern & Co.	6,000

MANICOBA.

		Pounds.
SEPTEMBER 1.—By the *Stephen*=Farnahyba:		
Rossbach Bros. & Co.	42,000	
Adolph Hirsch & Co.	3,500	
G. Amsinck & Co.	500	46,000
SEPTEMBER 1.—By the *Stephen*=Ceara:		
Various		37,000
SEPTEMBER 5.—By the *Rio de Janeiro*=Pernambuco:		
Lawrence Johnson & Co.		100,000
SEPTEMBER 7.—By the *Highland Prince*=Bahia:		
Adolph Hirsch & Co.		30,000

PLANTATIONS.

AUGUST 26.—By the *Vinovia*=London:		
Meyer & Brown	22,500	
The B. F. Goodrich Co.	200,000	
Aldens' Successors, Ltd.	62,000	
Michelin Tire Co.	56,000	
Robinson & Co.	45,000	
Charles T. Wilson Co., Inc.	33,500	
Raw Products Co.	35,000	
Henderson & Korn.	6,000	460,000
AUGUST 26.—By the *Lancastria*=London:		
A. Stern & Co.		11,000
AUGUST 28.—By the *Minnehaha*=London:		
L. Littlejohn & Co.		11,690
SEPTEMBER 1.—By the *City of Madras*=Colombo:		
Meyer & Brown	232,000	
L. Littlejohn & Co.	67,200	
J. T. Johnstone & Co.	2,200	
Edward Maurer & Co., Inc.	45,000	
Arnold & Zeiss.	22,500	
Henderson & Korn.	30,000	
Aldens' Successors, Ltd.	11,000	
Various	13,500	423,400
SEPTEMBER 1.—By the *Mesaba*=London:		
Goodyear Tire & Rubber Co.	200,000	
Rubber Trading Co.	50,000	
Fred. Stern & Co.	38,000	
G. R. Henke.	16,000	
Charles T. Wilson Co., Inc.	25,000	329,000
SEPTEMBER 5.—By the *Cloughton*=London:		
J. T. Johnstone & Co.	80,000	
Arnold & Zeiss.	33,500	
Robinson & Co.	22,500	
Various	2,000	138,000
SEPTEMBER 9.—By the *Foyle*=London:		
Robinson & Co.	45,000	
Arnold & Zeiss.	45,000	
General Rubber Co.	28,000	118,000
SEPTEMBER 11.—By the *Orduna*=Liverpool:		
Arnold & Zeiss.		9,000
SEPTEMBER 11.—By the *Aeon*=London:		
Charles T. Wilson Co., Inc.	45,000	
General Rubber Co.	7,000	52,000
SEPTEMBER 12.—By the *Mongolia*=London:		
Goodyear Tire & Rubber Co.	100,000	
Michelin Tire Co.	45,000	
Rubber Trading Co.	45,000	
Fred. Stern & Co.	22,500	
Various	5,000	217,500
SEPTEMBER 14.—By the *Atlantian*=London:		
Rubber Trading Co.		45,000
SEPTEMBER 19.—By the *Royal Prince*=Singapore:		
Meyer & Brown	85,000	
Edward Maurer & Co., Inc.	60,000	
The B. F. Goodrich Co.	336,000	
L. Littlejohn & Co.	312,731	
J. T. Johnstone & Co.	325,000	
Goodyear Tire & Rubber Co.	75,000	
Arnold & Zeiss.	75,000	

		POUNDS.
Henderson & Korn	43,000	
Charles T. Wilson Co., Inc.	25,000	
Robinson & Co.	22,500	
Rubber Trading Co.	20,000	
Aldens' Successors, Ltd.	11,000	
Raw Products Co.	16,000	
H. R. Jefferds	13,500	
General Fubber Co.	11,200	
Fred. Stern & Co.	6,000	
Fox & Co.	2,000	1,438,931

SEPTEMBER 21.—By the *Andania*=London:

Arnold & Zeiss	224,000	
The B. F. Goodrich Co.	115,000	
Michelin Tire Co.	70,000	
Robinson & Co.	56,000	
Charles T. Wilson Co., Inc.	30,000	495,000

CRUDE RUBBER ARRIVALS AT SEATTLE.

Consignee is given first, followed by shippers. Figured 130 pounds net to the case.

PLANTATION.

TO SEATTLE.

AUGUST 25.—By the steamer *Tensho Maru.*

The B. F. Goodrich Co.		
W. T. Easley	683,670	
Henderson & Korn.		
The East Asiatic Co.	16,510	
W. R. Grace & Co.		
Penang Rubber Estates & Allied Co.	11,050	
Planters Stores & Agency Co.	9,100	
Cumberbatch & Co.	8,060	
Goodyear Tire & Rubber Co.		
Planters Stores & Agency Co.	3,420	731,810

TO AKRON.

AUGUST 28.—By the steamer *Mexico Maru.*

The B. F. Goodrich Co.		
W. T. Easley		551,980

TO NEW YORK.

AUGUST 31.—By the steamer *Tamba Maru.*

Arnold & Zeiss.		
Weller & Co.		155,220

TO AKRON.

AUGUST 31.—By the steamer *Talthybuis.*

Firestone Tire & Rubber Co.		
The Waterhouse Co.	72,410	
Goodyear Tire & Rubber Co.		
Harrisons & Crosfield	255,710	
Anglo Malay Rubber Co.	37,310	
Rubber Estates of Johore	27,040	
Duff Development Co.	15,860	
Lankat Sumatra Rubber Co.	6,240	
Anglo Sumatra Rubber Estates	5,330	
Tamiang Rubber Estates	3,380	
Bandar Sumatra Rubber Co.	2,080	
Serdang Central Plantation Co.	2,080	
Glen Berrie Rubber Co.	1,690	429,130

TO NEW YORK.

Edward Maurer & Co., Inc.		
C. W. Mackie & Co.	23,270	
Charles T. Wilson Co., Inc.		
Anglo Sumatra Rubber Co.	2,860	
Insulinde Rubber & Tobacco Co.	1,560	
J. T. Johnstone & Co.		
Sungei Rampat Plantation Co.	2,860	
Arnold & Zeiss.		
Weller & Co.	139,750	
C. W. Mackie & Co.	55,130	
W. E. Cansfield Co.	4,420	
Arthur Meyer & Co.		
Duff Development Co.	16,250	
Insulinde Rubber & Tobacco Co.	1,560	
L. Littlejohn & Co.		
Kuala Nal Kelantan Rubber Co.	4,290	
W. E. Cansfield Co.	4,160	
Robinson & Co.		
Serdang Central Plantation Co.	130	256,230

TO SEATTLE.

The B. F. Goodrich Co.		
W. T. Easley	857,870	
W. R. Grace & Co.		
Casson & Co.	33,540	
Geo. Stewart Co.	11,700	
Goodyear Tire & Rubber Co.		
C. W. Mackie & Co.	14,690	
Planters Stores & Agency Co.	4,550	
Arnold & Zeiss.		
Third Mile Rubber Co.	6,240	928,590

TO AKRON.

SEPTEMBER 9.—By the steamer *Inaba Maru.*

Firestone Tire & Rubber Co.		
The Waterhouse Co.		140,140

TO AKRON.

SEPTEMBER 19.—By the steamer *Canada Maru.*

The B. F. Goodrich Co.		
W. T. Easley		362,700

GUTTA JELUTONG.

TO SEATTLE.

AUGUST 25.—By the steamer *Tensho Maru.*

L. Littlejohn & Co.		
Katz Bros.	33,150	
Bowers Rubber Works.		
Katz Bros.	12,480	45,630

GUTTA PERCHA.

TO SEATTLE.

AUGUST 25.—By the steamer *Tensho Maru.*

L. Littlejohn & Co.		
Katz Bros.		51,740

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JULY, 1916.

IMPORTS:	POUNDS.	VALUE.
India rubber	11,255,551	$6,470,125
Balata	148,639	62,109
Gutta percha	83,599	11,282
Manufactures of india rubber	.....	14,873
Rubber scrap	115,288	15,181
Totals	11,603,077	$6,573,570
EXPORTS:		
Balata	15,357	$6,708
Rubber scrap	131,836	28,119
India rubber boots.....*pairs*	1,239	2,638
India rubber shoes.....*pairs*	238,021	92,761
Automobile tires	.....	523,297
Other tires	.....	327,685
Belting, hose, etc.	.....	191,038
All other manufactures of india rubber	.....	534,541
Total	.....	$1,706,787

PORT OF SAN FRANCISCO—JULY, 1916.

IMPORTS:		
India rubber	1,027,330	$638,945
Gutta jelutong (Pontianak)	38,482	$1,800
Manufactures of india rubber	.....	191
Totals	1,065,812	$640,936
EXPORTS:		
Reclaimed rubber	10,064	$956
India rubber boots.....*pairs*	144	318
India rubber shoes.....*pairs*	2,055	1,551
Automobile tires	.....	183,357
Other rubber tires	.....	17,868
Belting, hose, etc.	.....	29,402
All other manufactures of india rubber	.....	10,148
Total	.....	$233,600

PORT OF SEATTLE—JULY, 1916.

IMPORTS:		
India rubber	1,923,150	$1,209,065
Gutta percha	126,959	12,206
Gutta jelutong (Pontianak)	1,254,037	63,062
Totals	3,304,146	$1,284,333
EXPORTS:		
India rubber boots.....*pairs*	87	$173
India rubber shoes.....*pairs*	33	52
Automobile tires	.....	20,632
Other rubber tires	.....	198
Belting, hose, etc.	.....	15,653
All other manufactures of india rubber	.....	1,313
Total	.....	$38,021

PORT OF SEATTLE—AUGUST, 1916.

IMPORTS:		
India rubber	1,145,952	$679,339
Manufactures of india rubber	.....	5
Totals	1,145,952	$679,344

PORT OF BOSTON—AUGUST, 1916.

IMPORTS:		
India rubber	67,062	$27,135
Manufactures of india rubber	.....	1,851
Rubber scrap	7,703	712
Totals	74,765	$29,708
EXPORTS:		
Rubber scrap	4,354	$1,315
India rubber boots.....*pairs*	13,300	24,029
India rubber shoes.....*pairs*	81,657	31,508
Automobile tires	.....	1,681
Other rubber tires	.....	125
Belting, hose, etc.	.....	1,647
All other manufactures of india rubber	.....	44,245
Total	.....	$104,550

PORT OF CHICAGO—AUGUST, 1916.

IMPORTS:		
Manufactures of india rubber	.....	$17

PORT OF CLEVELAND—AUGUST, 1916.

IMPORTS:		
India rubber	473,071	$279,708

PORT OF PHILADELPHIA—AUGUST, 1916.

EXPORTS:		
Belting, hose, etc.	.....	$3,472
Other manufactures of india rubber	.....	10,370
Total	.....	$13,842

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JULY, 1916.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Totals.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Totals.	Grand Totals.
Suter & Co.....*kilos*	62,224	3,360	5,615	18,080	89,279	12,410	.....	1,560	1,120	15,090	104,369
General Rubber Co. of Brazil.	37,818	2,681	2,355	1,061	43,915	38,971	14,718	10,655	83,416	147,760	191,675
Tancredo Porto & Co.	62,803	9,621	11,464	394	84,282	2,588	19,218	73	22,387	44,266	128,548
J. G. Araujo	31,741	3,133	1,989	157	37,020	5,683	217	3,044	162	9,106	46,126
M. Lobo	10,182	.....	1,032	23,196	34,410	.....	.....	.....	.....	.....	34,410
Ohliger & Co.	22,213	1,440	828	.....	24,481	.....	.....	.....	.....	.....	24,481
G. Fradelizi	20,033	.....	.....	.....	20,033	.....	8,635	856	10,542	20,033	40,066
Adelbert H. Alden, Ltd.	.....	302	1,249	.....	1,551	1,212	.....	2	15,276	16,496	18,047
Armazens Andresen	2,862	8	2,342	2,129	7,341	.....	.....	.....	.....	.....	7,341
Simfronio & Co.	1,665	317	2,038	12	4,032	.....	.....	.....	.....	.....	4,032
G. Deffner & Co.	2,240	83	77	260	2,660	.....	.....	.....	.....	.....	2,660
Th. Lévy, Camille & Co.	.....	.....	.....	.....	.....	.....	814	1,321	280	2,415	2,415
Matheus Silva & Co.	.....	.....	.....	.....	.....	.....	.....	.....	600	600	600
Totals	233,748	20,945	28,989	45,289	328,971	60,870	43,602	17,511	133,783	255,766	604,770
In transit, Iquitos	4,266	648	2,295	159,451	166,660	7,780	330	1,403	135,246	144,759	311,419
Totals: July, 1916	238,014	21,593	31,284	204,740	495,631	68,650	43,932	18,914	269,029	400,525	916,189
June, 1916	163,154	22,947	88,415	102,665	377,181	50,958	60,676	9,035	228,956	349,625	726,806
May, 1916	430,544	69,135	142,723	280,793	923,195	28,635	29,243	17,539	198,313	273,730	1,196,925
April, 1916	334,337	48,556	168,393	377,014	928,300	212,682	50,555	35,419	252,036	550,692	1,478,992
March, 1916	502,323	76,236	228,580	320,482	1,127,621	450,320	87,029	49,033	318,648	905,030	2,032,651
February, 1916	546,003	82,739	191,537	205,419	1,025,698	164,400	27,819	56,344	119,229	367,792	1,393,490
January, 1916	561,143	110,411	176,779	148,142	996,475	543,822	58,574	75,105	123,703	801,204	1,797,679

(Compiled by Suter & Co., Manáos.)

Official India Rubber Statistics for the United States.

For the Fiscal Years 1914-15-16 *and June,* 1915-16.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—*free:*	June 1915 Pounds.	June 1915 Value.	June 1916 Pounds.	June 1916 Value.	Twelve Months Ending June 1914 Pounds.	1914 Value.	1915 Pounds.	1915 Value.	1916 Pounds.	1916 Value.
India rubber:										
From Belgium	.....	.....	.....	.....	10,978,753	$6,462,760	1,902,370	$950,872	.....	.....
France	10,531	$5,082	31,616	$23,453	2,629,287	1,124,629	685,699	284,862	509,675	$312,144
Germany	.....	.....	.....	.....	7,079,260	3,614,510	739,103	358,931	.....	.....
Portugal	554,408	211,052	5,363	2,347	556,560	177,687	4,130,624	1,374,526	2,773,656	1,094,841
United Kingdom	8,893,562	4,707,279	8,321,535	5,632,710	48,279,674	31,152,336	75,168,236	39,188,519	72,469,408	48,144,416
Central Am. States and Br. Honduras	97,940	49,698	142,765	67,514	565,487	297,849	949,865	414,441	1,313,454	597,827
Mexico	103,060	37,522	185,202	90,602	640,448	333,327	1,668,415	650,975	3,261,507	1,262,291
Brazil	3,770,543	1,895,683	4,832,346	2,363,662	40,641,305	16,319,048	48,753,670	20,738,776	54,968,227	25,150,493
Other So. America	232,308	108,372	548,577	278,677	1,845,422	806,888	4,708,390	2,008,790	6,253,462	2,892,877
East Indies	5,109,924	2,684,580	16,170,761	10,164,836	16,597,105	9,675,709	27,898,683	14,051,598	125,532,067	75,092,942
Other countries	13,536	6,450	47,053	37,355	2,182,441	1,255,108	5,463,371	3,007,979	704,101	496,959
Totals	18,785,812	$9,705,718	30,285,218	$18,661,156	131,995,742	$71,219,851	172,068,428	$83,030,269	267,775,557	$155,044,790
Balata	148,581	55,842	165,498	64,830	1,533,024	793,126	2,472,224	963,384	2,554,405	996,102
Guayule gum	299,381	79,005	306,178	91,044	1,475,804	607,076	5,111,849	1,441,367	2,816,068	880,813
†Gutta jelutong (Pontianak)	1,607,234	77,232	5,160,014	261,615	24,926,571	1,155,402	14,851,364	731,995	27,858,335	1,322,262
Gutta percha	4,543	1,013	622,782	80,243	1,846,109	323,567	1,619,214	230,750	3,188,449	342,226
Totals	20,845,551	$9,918,810	36,539,690	$19,158,888	161,777,250	$74,099,022	196,121,979	$86,397,765	304,182,814	$158,586,193
Rubber scrap	1,173,808	74,895	782,286	65,512	25,958,261	2,063,198	11,006,928	726,914	16,371,573	1,271,903
Totals, unmanufactured	22,019,359	$9,993,705	37,321,976	$19,224,400	187,745,511	$76,162,220	207,128,907	$87,124,679	320,554,387	$159,858,096
Chicle ..... *dutiable*	321,490	$134,921	681,294	$286,338	8,040,891	$3,012,458	6,499,664	$2,459,810	7,346,969	$2,828,194
MANUFACTURED—*dutiable:*										
Gutta percha	.....	$137	.....	$24,105	.....	$42,023	.....	$10,841	.....	$57,875
India rubber	.....	52,025	.....	56,447	.....	1,517,789	.....	791,281	.....	398,020
Totals, manufactured	.....	$52,162	.....	$80,552	.....	$1,559,812	.....	$802,122	.....	$455,895
Substitutes—elastic on, etc	.....	$2,517	.....	$735	.....	$87,642	.....	$30,349	.....	$16,179

EXPORTS OF DOMESTIC MERCHANDISE.

MANUFACTURED—										
Automobile tires:										
To Belgium	.....	.....	.....	.....	.....	$15,730	.....	.....	.....	.....
Germany	.....	.....	.....	.....	.....	132,181	.....	$6,090	.....	.....
*Russia in Europe	.....	.....	.....	$1,233	.....	.....	.....	.....	.....	$1,125,733
England	.....	$365,606	.....	666,408	.....	1,503,440	.....	2,655,099	.....	9,178,117
Canada	.....	110,852	.....	87,980	.....	961,937	.....	772,574	.....	1,176,836
Mexico	.....	7,117	.....	10,772	.....	111,948	.....	190,813	.....	236,811
Cuba	.....	29,790	.....	52,547	.....	.....	.....	106,083	.....	547,410
Australia	.....	64,519	.....	108,315	.....	.....	.....	245,240	.....	1,551,154
*New Zealand	.....	.....	.....	45,859	.....	.....	.....	.....	.....	944,008
Philippine Islands	.....	25,025	.....	36,594	.....	141,205	.....	250,832	.....	391,634
Other countries	.....	135,953	.....	307,015	.....	638,826	.....	736,539	.....	2,784,524
Totals	.....	$738,862	.....	$1,316,723	.....	$3,505,267	.....	$4,963,270	.....	$17,936,227
All other tires	.....	119,050	.....	199,529	.....	563,372	.....	576,602	.....	3,003,077
Belting, hose and packing	.....	178,517	.....	400,315	.....	2,372,887	.....	1,807,848	.....	2,989,173
Rubber boots ..... *pairs*	3,313	9,092	31,284	66,792	101,361	279,206	318,727	726,765	720,130	1,619,260
Rubber shoes ..... *pairs*	99,269	48,071	171,486	83,614	1,634,258	834,289	2,219,900	2,053,560	1,976,696	1,046,102
Scrap and old rubber	365,527	49,640	396,032	44,491	6,207,678	598,287	2,422,091	291,421	4,561,177	424,650
Reclaimed rubber	613,433	77,291	365,267	46,620	5,583,860	834,440	5,970,380	822,561	6,406,946	871,262
Other rubber manufactures	.....	480,582	.....	797,428	.....	3,453,472	.....	3,525,486	.....	7,290,345
Totals, manufactured	.....	$1,701,105	.....	$2,955,512	.....	$12,441,220	.....	$14,767,513	.....	$35,180,096
Fountain pens ..... *number*	19,605	$20,218	18,556	$11,860	332,935	$326,966	244,744	$251,309	207,339	$147,584

EXPORTS OF FOREIGN MERCHANDISE.

UNMANUFACTURED—										
Balata	52,624	$23,017	37,057	$20,188	223,983	$127,139	1,076,619	$426,735	667,168	$245,329
Guayule gum	5,000	1,940	.....	.....	56,399	22,378	29,891	8,931	18,500	7,770
Gutta jelutong	.....	.....	56,000	2,520	32,330	2,195	.....	.....	58,773	2,825
Gutta percha	.....	.....	.....	.....	14,319	5,060	9,457	4,603	60,023	11,446
India rubber	399,302	194,457	296,461	154,521	3,747,749	2,398,150	6,393,145	3,361,107	4,662,889	2,661,301
Rubber scrap and refuse	3,483	373	.....	.....	24,316	2,450	3,483	373	9,204	734
Totals, unmanufactured	460,409	$219,787	389,518	$177,229	4,099,096	$2,557,372	7,512,595	$3,801,749	5,476,557	$2,929,405
Chicle	9,561	$3,053	25,251	$11,323	.....	.....	698,561	$236,547	136,889	$44,124
MANUFACTURED—										
Gutta percha	.....	.....	.....	.....	.....	.....	.....	$7,489	.....	$537
India rubber	.....	$1,983	.....	$1,462	.....	$7,638	.....	364	.....	38,649
Totals, manufactured	.....	$1,983	.....	$1,462	.....	$7,638	.....	$7,853	.....	$39,186

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—	June 1915 Pounds.	June 1915 Value.	June 1916 Pounds.	June 1916 Value.	Twelve Months Ending June 1914 Pounds.	Twelve Months Ending June 1914 Value.	Twelve Months Ending June 1915 Pounds.	Twelve Months Ending June 1915 Value.	Twelve Months Ending June 1916 Pounds.	Twelve Months Ending June 1916 Value.
To Alaska:										
Belting, hose and packing.	.....	$14,072	.....	$8,253	.....	$110,545	.....	$107,176	.....	$128,749
Boots and shoes.....*pairs*	5,020	20,124	6,252	17,267	55,476	174,033	55,719	152,241	74,759	197,060
Other rubber goods.....	.....	3,738	.....	4,671	.....	31,200	.....	17,179	.....	40,449
Totals	.....	$37,934	.....	$30,191	.....	$315,778	.....	$276,596	.....	$366,258
To Hawaii:										
Belting, hose and packing.	.....	$9,114	.....	$6,723	.....	$60,706	.....	$69,562	.....	$90,952
Automobile tires	.....	42,520	.....	34,209	.....	357,987	.....	439,553	.....	523,793
Other tires	.....	4,495	.....	11,266	.....	53,196	.....	66,526	.....	86,086
Other rubber goods.....	.....	6,852	.....	8,342	.....	58,364	.....	52,484	.....	90,660
Totals	.....	$62,981	.....	$60,540	.....	$530,253	.....	$628,125	.....	$791,491
To Philippine Islands:										
Belting, hose and packing.	.....	$5,533	.....	$1,630	.....	$50,944	.....	$58,606	.....	$57,686
Boots and shoes.....*pairs*	899	958	11,267	7,676	11,641	12,594	22,865	22,010	28,140	22,681
Tires	.....	32,698	.....	54,872	.....	235,006	.....	332,746	.....	422,918
Other rubber goods.....	.....	12,425	.....	8,558	.....	123,814	.....	120,326	.....	247,023
Totals	.....	$51,614	.....	$72,736	.....	$422,358	.....	$533,607	.....	$750,308
To Porto Rico:										
Belting, hose and packing.	.....	$1,262	.....	$4,533	.....	$27,839	.....	$28,365	.....	$42,539
Automobile tires	.....	14,437	.....	36,698	.....	296,201	.....	251,426	.....	403,530
Other tires	.....	2,410	.....	553	.....	44,330	.....	26,665	.....	30,462
Other rubber goods.....	.....	2,826	.....	11,384	.....	37,887	.....	56,141	.....	74,975
Totals	.....	$20,935	.....	$53,168	.....	$406,257	.....	$362,597	.....	$551,506

*Not separately stated prior to January 1, 1916.
†Pontianak imported 30 days after May 12, 1916, dutiable at 10 per cent ad valorem.

WORLD'S RUBBER PRODUCTION AND DISTRIBUTION.

For the year ended December 31, 1915.

PRODUCTION.	Per Cent.	Tons.
Plantation	67.9	107,867
Brazilian	23.5	37,220
Rest (including Central American, African and Mexican)	8.6	13,615
		158,702

DISTRIBUTION.	Per Cent.	Tons.
America	61.0	96,792
Great Britain	9.5	15,072
Russia	6.3	10,000
Germany and Austria	3.7	6,000
France	6.8	10,770
Italy, etc.	4.1	6,500
Scandinavia	4.1	6,568
Japan and Australia	1.7	2,500
Canada	2.8	4,500
Belgium	...	.....
		158,702

Balata, Gutta Percha, Guayule, Reclaimed and Waste Rubber are not included.

RUBBER RETAINED MONTHLY.

1915.

	United States.	Great Britain.	Russia.*	France.*	Germany.	Italy.*	Canada.*	Totals.	Totals month on month.
January	3,328	5,837	}	} 782	.....	18	428	10,724	10,724
February	6,576	1,248	} 662	} 418	.....	245	636	9,454	20,178
March	11,366	3,267	125	631	.....	258	185	15,832	36,010
April	8,952	— 120	531	971	.....	709	195	11,238	47,248
May	7,186	— 1,487	1,093	840	.....	728	242	8,602	55,850
June	8,208	165	2,139	1,159	.....	1,110	332	13,113	68,963
July	8,224	— 981	1,157	1,282	.....	322	366	10,440	79,403
August	7,506	1,012	722	623	.....	697	235	10,795	90,198
September	8,664	789	1,029	1,240	.....	697	708	13,127	103,325
October	7,617	3,160	645	1,693	.....	400	330	13,845	117,170
November	8,394	1,293	1,061	238	.....	753	431	12,170	129,340
December	10,771	889	1,093	893	.....	567	245	14,458	143,798
Totals	96,792	15,072	10,257	10,770	6,000†	6,580	4,333	143,798	149,798

1916.

	United States.	Great Britain.	Russia.*	France.*	Germany.	Italy.*	Canada.*	Totals.	Totals month on month.
January	9,252	2,760	466	964	.....	620	449	14,511	14,511
February	9,376	164	467	1,368	.....	440	392	12,207	26,718
March	12,071	3,057	112	1,407	.....	.....	497	.....	.....
April	10,500	3,699	.....	1,443	.....	.....	491	.....	.....
May	.....	269	.....	780	.....	.....	.....	.....	.....
June	.....	533	.....	.....	.....	.....	.....	.....	.....
July	.....	1,791	.....	.....	.....	.....	.....	.....	.....
Totals	41,199	12,273	1,045	5,962	.....	1,060	1,829	26,718	.....

*Including Gutta Percha. †Estimated.
Compiled by W. H. Rickinson & Son, London, England.

IMPORTS AND EXPORTS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.

Week Ending—	India Rubber. Pounds.	India Rubber. Value.	Scrap for Re-manufacture. Pounds.	Scrap for Re-manufacture. Value.	Balata. Pounds.	Balata. Value.	Gutta Percha. Pounds.	Gutta Percha. Value.	Chicle Pounds.	Chicle Value.
August 25, 1916	*	$1,564	.....	.....	.....	.....	.....	$6,384	.....	.....
	3,656,433	2,054,814	151,272	$15,385	109,305	$54,709	151,872	15,830	3,576	$1,242
September 1, 1916	*	4,248	.....	.....	.....	.....	..... *	2,611	.....	.....
	1,174,033	625,575	138,699	9,352	43,939	29,883	.....	.....	57,406	35,592
September 8, 1916	*	9,724	.....	.....	.....	.....	..... *	107	.....	.....
	1,782,233	853,354	42,230	6,370	24,690	9,307	.....	.....	.....	.....
September 15, 1916	*	9,043	.....	.....	.....	.....	..... *	23,462	.....	.....
	2,343,294	1,270,821	139,725	7,628	41,487	16,438	29,326	9,692	.....	.....

*Pounds not specified.

EXPORTS.

FIGURES ISSUED FROM AUGUST 25, 1916, TO SEPTEMBER 23, 1916.

EXPORTED TO—	Belting, Hose and Packing.	Footwear. Boots.	Footwear. Shoes.	Tires. Auto.	Tires. Other.	Insulated Wire and Cables.	Other mnf. of India Rubber.	Fountain Pens.	Chewing Gum.	Reclaimed Rubber.	Scrap Rubber.
NORTH AMERICA:											
Bermuda	$60	.....	$16	.....	$77	.....	$254	$12	$91	.....	.....
British Honduras	.....	.....	.....	.....	.....	.....	632	.....	.....	.....	.....
Canada	25	.....	.....	.....	.....	.....	149	.....	.....	.....	.....
Central American States—											
Costa Rica	465	.....	30	$943	115	$1,454	830	.....	461	.....	.....
Guatemala	961	.....	.....	27,685	76	212	2,196	.....	423	.....	.....
Honduras	343	.....	.....	1,793	2	285	488	.....	13	.....	.....
Nicaragua	.....	.....	.....	.....	.....	.....	521	.....	248	.....	.....
Panama	6,002	$60	775	3,019	687	6,657	6,275	1	2,536	.....	.....
Salvador	621	.....	.....	560	69	10	2,850	1	.....	.....	.....
Mexico	7,101	.....	349	4,867	.....	2,106	3,849	.....	44	.....	.....
Newfoundland	25	.....	9,967	402	.....	316	1,827	40	344	.....	.....
West Indies—											
British—											
Barbados	5	.....	.....	280	5	.....	341	.....	.....	.....	.....
Jamaica	778	.....	541	5,542	1,163	68	1,339	.....	11	.....	.....
Trinidad and Tobago	1,800	.....	375	725	285	22	929	.....	.....	.....	.....
Other British	140	.....	518	532	1,003	130	423	34	.....	.....	.....
Cuba	26,213	.....	39	63,391	29,869	32,884	45,651	160	937	.....	.....
Danish	64	.....	.....	198	8	.....	178	.....	9	.....	.....
Dutch	.....	.....	.....	126	186	.....	79	.....	.....	.....	.....
French	.....	.....	.....	547	.....	45	.....	.....	.....	.....	.....
Haiti	279	.....	.....	13	11	.....	261	.....	44	.....	.....
Santo Domingo	1,301	.....	.....	1,784	88	110	413	.....	136	.....	.....
Totals, North America	$46,183	$60	$12,610	$112,407	$33,644	$44,299	$69,485	$248	$5,297	.....	.....
EUROPE:											
Denmark	$790	.....	.....	.....	$9,000	.....	$710	$1,267	.....	.....	.....
France	1,939	$3,562	$18,959	$18,008	37,918	$16,179	40,321	400	$2,244	$8	$5,444
Greece	.....	.....	.....	.....	.....	.....	.....	.....	1,332	.....	.....
Italy	.....	.....	8,993	1,369	31,340	6,078	12,341	786	.....	.....	.....
Netherlands	1,438	.....	2,681	11,970	1,325	8,423	2,558	1,378	225	.....	.....
Norway	2,267	.....	.....	7,431	51	23,686	3,569	.....	.....	.....	.....
Portugal	232	.....	.....	1,935	447	.....	97	280	.....	.....	.....
Russia in Europe	3,079	.....	.....	1,403	.....	6,175	313	.....	.....	.....	.....
Spain	213	.....	.....	.....	.....	1,212	1,913	1,100	.....	.....	.....
Sweden	515	.....	.....	3,585	.....	.....	50	.....	.....	.....	.....
United Kingdom—											
England	33,793	172	30,531	105,484	61,183	22,201	193,942	472	60,480	6,500	5,168
Scotland	.....	195	581	.....	.....	.....	.....	.....	.....	.....	.....
Totals, Europe	$44,266	$3,929	$61,745	$151,185	$141,264	$84,954	$255,814	$5,683	$64,281	$6,508	$10,612
SOUTH AMERICA:											
Argentina	$14,803	.....	$1,292	$67,955	$15,045	$13,381	$25,772	$51	$2,333	.....	.....
Bolivia	.....	.....	.....	428	7	52	77	.....	.....	.....	.....
Brazil	12,563	.....	2,960	25,410	669	34,020	14,361	3,427	20	.....	.....
Chile	10,813	.....	124	4,754	514	6,972	5,098	142	.....	.....	.....
Colombia	1,257	.....	209	2,887	271	6,897	3,067	2	.....	.....	.....
Ecuador	686	.....	.....	1,600	213	265	1,123	.....	100	.....	.....
Guiana—British	121	.....	.....	946	58	40	190	24	.....	.....	.....
Dutch	.....	.....	.....	162	.....	.....	197	.....	.....	.....	.....
Peru	4,164	$142	146	11,483	55	1,237	4,063	.....	425	.....	.....
Uruguay	1,470	.....	259	3,186	2,676	2,526	4,807	92	.....	.....	.....
Venezuela	929	.....	.....	5,881	1,873	1,323	2,526	7	52	.....	.....
Totals, South America	$46,803	$142	$4,990	$124,691	$21,381	$66,713	$61,281	$3,745	$2,930	.....	.....
ASIA:											
Aden	.....	.....	.....	$92	.....	.....	.....	.....	.....	.....	.....
China	$110	$7	.....	996	$4	.....	.....	.....	.....	.....	.....
British India	1,367	.....	$21	4,268	182	$1,233	$5,069	$1,167	$194	.....	.....
Straits Settlements	23	.....	.....	.....	.....	.....	101	.....	.....	.....	.....
Dutch East Indies	.....	.....	112	25,247	3,292	8,516	887	450	.....	.....	.....
Hongkong	.....	.....	.....	.....	.....	.....	175	580	49	.....	.....
Japan	.....	543	12,713	.....	.....	.....	646	.....	.....	.....	.....
Russia in Asia	.....	.....	.....	.....	.....	42	51	.....	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	483	.....	.....	.....	.....
Totals, Asia	$1,500	$550	$12,846	$30,603	$3,478	$9,791	$7,412	$2,197	$243	.....	.....
OCEANIA:											
British—											
Australia and Tasmania	$9,630	$508	$3,970	$14,177	$508	$7,095	$20,951	$484	$4,294	.....	.....
New Zealand	530	137	59	8,604	5,925	1,276	5,534	.....	349	.....	.....
Philippine Islands	847	.....	4,424	.....	73	126	11,971	.....	1,689	.....	.....
British Oceania	.....	.....	.....	.....	170	.....	.....	.....	.....	.....	.....
Totals, Oceania	$11,007	$645	$8,453	$22,781	$6,676	$8,497	$38,456	$484	$6,432	.....	.....
AFRICA:											
British Africa—											
West	.....	.....	.....	$46	.....	.....	$2	.....	.....	.....	.....
South	$76,686	.....	$53	23,159	$170	$762	7,286	.....	$54	.....	.....
East	.....	.....	.....	260	.....	.....	.....	.....	.....	.....	.....
Egypt	.....	.....	.....	752	.....	.....	.....	.....	.....	.....	.....
Portuguese Africa	.....	.....	1	.....	16	.....	3	.....	21	.....	.....
Totals, Africa	$76,686	.....	$54	$24,217	$186	$762	$7,291	.....	$75	.....	.....

LONDON AND LIVERPOOL RUBBER STATISTICS.

IMPORTS.

AUGUST, 1916.

UNMANUFACTURED—	London. Pounds.	London. Value.	Liverpool. Pounds.	Liverpool. Value.
Crude rubber:				
From German West Africa.	.....	.....	4,000	$1,682
Java	677,300	$430,928	.....	.....
Dutch Borneo	8,800	5,987	.....	.....
Other Dutch Possessions in Indian Seas	627,400	422,227	.....	.....
French West Africa.	.....	.....	59,000	24,363
Portugal	.....	.....	11,200	3,159
Portuguese W. Africa	.....	.....	2,400	899
Portuguese E. Africa	10,000	3,645	.....	.....
Spain	.....	.....	1,700	729
Spanish West Africa.	.....	.....	400	136
Panama	.....	.....	700	316
Peru	.....	.....	309,900	173,732
Brazil	.....	.....	1,309,500	726,257
Egypt	200	146	.....	.....
Gold Coast	.....	.....	99,800	30,239
Nigeria	.....	.....	25,800	9,234
Cape of Good Hope.	21,300	15,387	.....	.....
Zanzibar and Pemba.	2,000	1,759	.....	.....
United States	10,600	3,888	32,100	16,816
British East Africa..	5,600	1,750	5,000	2,236
Anglo-Egyptian Sudan	2,600	1,108	.....	.....
British India	93,200	56,342	.....	.....
Straits Settlements...	2,359,700	1,402,543	509,800	256,501
Fed. Malay States...	3,857,800	2,376,171	6,900	3,392
Ceylon and Dependencies	1,922,000	1,187,293	88,600	58,923
British North Borneo	80,100	51,681	.....	.....
New South Wales...	3,100	1,959	.....	.....
British West Indies..	200	97	.....	.....
British Guiana	900	471	.....	.....
Totals	9,682,800	$5,963,382	2,466,800	$1,308,614
Waste and reclaimed rubber:				
From France	32,700	$2,324	.....	.....
Portugal	10,600	1,215	.....	.....
Japan	3,800	365	.....	.....
United States	32,200	6,454	61,400	$12,617
Brazil	7,700	1,142	.....	.....
Argentina	.....	.....	49,400	2,041
Channel Islands	200	19	.....	.....
Cape of Good Hope..	1,100	185	.....	.....
Natal	1,300	151	.....	.....
Ceylon	22,200	1,414	.....	.....
Straits Settlements...	.....	15	.....	.....
British India	17,500	1,162	4,800	535
New Zealand	3,200	146	.....	.....
British Guiana	200	73	.....	.....
Totals	132,700	$14,665	115,600	$15,193

EXPORTS.

Waste and reclaimed rubber Mnfs. of the United Kingdom:				
To Russia	.....	.....	219,200	$36,826
Sweden	.....	.....	1,200	306
Denmark	.....	.....	67,200	12,476
France	26,500	$4,860	800	146
Spain	.....	.....	21,900	1,555
Italy	268,800	15,066	19,100	1,798
Japan	.....	.....	20,800	3,961
United States	291,100	25,471	129,400	14,804
Totals	586,400	$45,397	479,600	$71,872

RE-EXPORTS.

Crude rubber:				
To Russia	357,700	$233,363	740,100	$507,899
Sweden	67,200	60,653	150,500	109,678
Denmark	33,600	20,412	.....	.....
Norway	.....	.....	3,400	2,294
France	1,749,700	792,953	263,100	166,956
Spain	4,900	3,927	19,300	12,782
Italy	103,300	55,399	145,900	83,407
United States	2,554,800	1,613,938	203,100	59,896
Transvaal	300	248	.....	.....
Canada	361,700	231,443	200	173
Victoria	.....	.....	58,500	40,500
New South Wales	.....	.....	2,400	1,652
Totals	5,233,200	$3,012,336	1,586,500	$985,237
Waste and reclaimed rubber:				
To France	.....	.....	32,000	$7,475
Italy	.....	.....	9,500	1,361
Totals	.....	.....	41,500	$8,836

RUBBER STATISTICS FOR CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED—*free:*	June, 1916. Pounds.	June, 1916. Value.	Three Months Ending June, 1916. Pounds.	Three Months Ending June, 1916. Value.
Rubber and gutta percha, crude caoutchouc or india rubber:				
From Great Britain	220,402	$143,087	1,290,647	$924,206
United States	279,257	161,676	1,060,150	660,790
Straits Settlements	.....	.....	33,849	21,607
Other countries	.....	.....	2,217	1,891
Totals	499,659	$304,763	2,368,863	$1,608,494
Rubber, re-covered:				
From Great Britain	.....	.....	18,740	$3,610
United States	332,706	$40,596	1,055,060	146,905
Totals	332,706	$40,596	1,073,800	$150,515
Hard rubber, in sheets and rods:				
From United States	401	$313	2,029	$1,713
Rubber substitute:				
From United States	39,738	$3,270	169,841	$14,624
Rubber, powdered, and rubber or gutta percha waste:				
From Great Britain	.....	.....	81,052	$5,274
United States	15,967	$865	397,536	28,377
Other countries	.....	.....	3,928	168
Totals	15,967	$865	482,516	$33,819
Rubber thread, not covered:				
From United States	2,318	$3,611	11,650	$17,831
Balata, crude:				
From United States	2,243	$1,636	4,719	$3,433
Chicle, crude:				
From United States	138,361	$52,422	157,349	$60,149
British Honduras	45,753	16,523	810,631	298,533
Mexico	.....	.....	161	90
Totals	184,114	$68,945	968,141	$358,772

MANUFACTURED—*dutiable:*	June, 1916. General Tariff. Value.	June, 1916. Preferential Tariff. Value.	Three Months Ending June, 1916. General Tariff. Value.	Three Months Ending June, 1916. Preferential Tariff. Value.
Waterproof clothing:				
From Great Britain	$12	$32,317	$20	$81,358
United States	35,426	.....	84,845	.....
Totals	$35,438	$32,317	$84,865	$81,358
Hose, lined with rubber:				
From United States	$9,948	.....	$27,677	.....
Mats and matting:				
From Great Britain	.....	.....	.....	$9
United States	$407	.....	$1,398	.....
Totals	$407	.....	$1,398	$9
Packing:				
From Great Britain	.....	$157	.....	$161
United States	$8,999	.....	$23,163	.....
Totals	$8,999	$157	$23,163	$161
Tires of rubber for all vehicles:				
From Great Britain	.....	$1,824	$3,214	$6,684
United States	$103,927	.....	273,808	.....
France	1,215	.....	1,832	.....
Other countries	95	.....	182	.....
Totals	$105,237	$1,824	$279,036	$6,684
***Rubber cement, and all other manufactures of india rubber and gutta percha, N. O. P.:**				
From Great Britain	$71	$19,862	$985	$69,175
United States	70,787	.....	206,817	.....
Other countries	.....	.....	401	.....
Totals	$70,858	$19,862	$208,203	$69,175
Hard rubber, in tubes:				
From United States	.....	.....	$923	.....
Boots and shoes:				
From Great Britain	.....	$443	.....	$936
United States	$10,329	.....	$25,947	.....
Totals	$10,329	$443	$25,947	$936
Belting:				
From Great Britain	.....	$13	.....	$247
United States	$3,637	.....	$11,642	.....
Totals	$3,637	$13	$11,642	$247

Webbing—over one inch wide:				
From Great Britain	$22	$1,994	$22	$3,105
United States	25,139	.....	60,628	.....
Totals	$25,161	$1,994	$60,650	$3,105

*In addition the imports of rubber cement and all manufactures of india rubber and gutta percha not otherwise provided for amounted to $229 from various countries for June; and $58 from Great Britain and $1,547 from various countries for the three months ending June, 1916, the values being at treaty rates.

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

	June, 1916.		Three Months Ending June, 1916.	
MANUFACTURED—*dutiable:*	Product of Canada. Value.	Re-exports of foreign goods. Value.	Product of Canada. Value.	Re-exports of foreign goods. Value.
Belting:				
To Newfoundland	$756	.....	$1,387	.....
Hose:				
To Great Britain	$32,979	.....	$107,506	.....
United States	.....	.....	1,335	$125
Newfoundland	96	.....	981	.....
Other countries	2,072	.....	2,819	.....
Totals	$35,147	.....	$112,641	$125
Boots and shoes:				
To Great Britain	$72,756	.....	$134,430	.....
United States	51	$237	71	$252
Newfoundland	429	.....	2,083	.....
Australia	1,769	.....	2,319	.....
New Zealand	1,035	.....	1,660	.....
Other countries	927	.....	3,175	.....
Totals	$76,967	$237	$143,738	$252
Clothing:				
To United States	.....	$16	.....	$16
Newfoundland	.....	.....	$150	.....
Totals	.....	$16	$150	$16
Tires:				
To Great Britain	$3,701	.....	$124,546	.....
United States	5,148	$515	30,228	$2,841
Newfoundland	1,157	.....	2,493	.....
Other countries	26,241	.....	55,503	.....
Totals	$36,247	$515	$212,770	$2,841
*Rubber waste:				
To Great Britain	.....	.....	$9,020	.....
United States	$15,436	.....	54,023	.....
Totals	$15,436	.....	$63,043	.....
All other mnfs., N. O. P.:				
To Great Britain	$11,114	.....	$22,936	.....
United States	125	$298	532	$1,448
Newfoundland	377	.....	847	.....
New Zealand	4	.....	4	.....
Other countries	425	.....	1,122	516
Totals	$12,045	$298	$25,441	$1,964
†Gum chicle:				
To United States	$139,442	.....	$367,121	.....
Other countries	1,704	.....	1,704	.....
Totals	$141,146	.....	$368,825	.....

*During June 148,700 pounds of rubber waste was exported to the United States; and 75,100 pounds to Great Britain and 730,700 pounds to the United States for the three months ending June, 1916.

†During June 259,709 pounds of gum chicle was exported to the United States, and 2,250 pounds to various countries, making a total of 641,992 pounds to the United States and 2,250 pounds to various countries for the three months ending June, 1916.

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Five Months Ending May, 1915.		Five Months Ending May, 1916.	
UNMANUFACTURED—	Pounds.	Value.	Pounds.	Value.
India rubber and gutta percha —raw and reclaimed:				
From Straits Settlements	1,059,960	.....	933,900	.....
African Fr. Colony	.....	.....	29,700	.....
Belgian Congo	.....	.....	131,340	.....
Brazil	2,889,480	.....	2,757,040	.....
Other countries	159,280	.....	852,720	.....
Totals	4,108,720	$2,883,574	4,704,700	$3,301,844
Rubber scrap	397,320	$31,370	2,582,360	$203,889
MANUFACTURED—				
India rubber and gutta percha —threads:				
From United States	16,060	.....	26,620	.....
Great Britain	14,520	.....	15,400	.....
Other countries	.....	.....	3,740	.....
Totals	30,580	$52,754	45,760	$80,288
India rubber and gutta percha —sheets:				
Cut sheets	1,760	$2,625	1,540	$2,297
Elastic fabric	3,300	1,303	220	87
Insulated wire	220	58	.....	.....
Hard rubber	1,760	1,235	25,740	18,065
India rubber and gutta percha —tubes:				
Cut sheets	660	$1,042	660	$1,042
Elastic fabric:				
From Austria-Hungary	880	.....	.....	.....
Great Britain	5,500	.....	.....	.....
Other countries	25,520	.....	3,080	.....
Totals	31,900	$16,791	3,080	$1,621
Other forms	2,200	$1,351	2,420	$1,486
Belting	24,860	$15,266	60,060	$36,882
Rubber coated fabrics...*pieces*	39,380	$48,366	55,000	$67,550
Other forms:				
From Great Britain	13,200	.....	13,640	.....
Other countries	440	.....	220	.....
Totals	13,640	$11,966	13,860	$12,159
Boots and shoes:—*pairs*				
From United States	8,271	.....	14,140	.....
Austria-Hungary	1,531	.....	.....	.....
France	88	.....	10,138	.....
Germany	4,224	.....	.....	.....
Other countries	84	.....	63	.....
Totals	14,198	$13,701	24,341	$23,489
Elastic webbing:				
From Austria-Hungary	5,500	.....	.....	.....
France	7,260	.....	6,600	.....
Germany	25,520	.....	880	.....
Other countries	10,340	.....	8,360	.....
Totals	48,620	$63,980	15,840	$20,844
Elastic fabric—not specified:				
From Austria-Hungary	8,580	.....	.....	.....
France	5,040	.....	152,460	.....
Germany	15,180	.....	220	.....
Great Britain	41,800	.....	58,740	.....
Other countries	3,520	.....	3,300	.....
Totals	75,020	$59,232	214,720	$169,531
Tires:				
From France	56,980	.....	277,640	.....
Germany	2,200	.....	.....	.....
Great Britain	79,420	.....	167,640	.....
Other countries	13,860	.....	21,780	.....
Totals	152,460	$267,112	467,060	$819,478
Other rubber manufactures:				
From Austria-Hungary	12,980	.....	.....	.....
France	104,280	.....	742,060	.....
Germany	62,700	.....	.....	.....
Great Britain	139,700	.....	356,620	.....
Other countries	25,080	.....	314,600	.....
Totals	344,740	$241,945	1,413,280	$991,866
Total Imports	.....	$3,713,671	.....	$5,752,418

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

	Five Months Ending May, 1915.		Five Months Ending May, 1916.	
UNMANUFACTURED—	Pounds.	Value.	Pounds.	Value.
India rubber and gutta percha —raw and reclaimed	198,440	$69,634	554,840	$194,698
MANUFACTURED—				
India rubber and gutta percha —threads:				
To Germany	5,720	.....	.....	.....
Great Britain	.....	.....	1,760	.....
Argentina	1,100	.....	3,740	.....
Other countries	28,600	.....	12,320	.....
Totals	35,420	$62,146	17,820	$31,266
India rubber and gutta percha —sheets:				
Cut sheets	4,400	$6,562	3,080	$4,593
Elastic fabric	1,540	458	440	174
Insulated wire	1,100	290	.....	.....
Hard rubber	20,240	14,205	34,100	23,932
India rubber and gutta percha —tubes:				
Cut sheets	.....	.....	8,140	$1,285
Elastic fabric	52,580	$27,676	29,700	15,633
Other forms	24,860	15,266	58,960	36,207
Belting	1,540	946	1,540	946
Boots and shoes.....*pairs*	50	48	.....	.....

MANUFACTURED—	Five Months Ending May, 1915. Pounds.	Value.	Five Months Ending May, 1916. Pounds.	Value.
Elastic webbing:				
To France	660	.....	3,740	.....
Greece	22,880	.....	34,540	.....
Egypt	1,540	.....	10,560	.....
Argentina	19,140	.....	52,360	.....
Brazil	29,260	.....	43,560	.....
Cuba	17,160	.....	15,180	.....
Other countries	24,640	.....	75,020	.....
Totals	115,280	$151,698	234,960	$308,897
Elastic fabric—not specified:				
To Spain	660	.....	.....	.....
Argentina	1,540	.....	10,560	.....
Brazil	.....	.....	220	.....
Uruguay	1,100	.....	1,760	.....
Other countries	2,200	.....	8,140	.....
Totals	5,500	$9,650	20,680	$36,284
Tires:				
To France	.....	.....	96,800	.....
Great Britain	.....	.....	2,668,600	.....
Switzerland	214,940	.....	66,000	.....
India and Ceylon	95,040	.....	148,720	.....
Australia	12,320	.....	43,780	.....
Argentina	320,760	.....	518,980	.....
Brazil	151,800	.....	298,320	.....
Other countries	1,866,260	.....	194,480	.....
Totals	2,661,120	$4,669,056	4,035,680	$7,080,784
Other rubber manufactures:				
To Great Britain	.....	.....	27,940	.....
Switzerland	71,280	.....	12,100	.....
Argentina	37,180	.....	46,020	.....
Other countries	178,860	.....	98,120	.....
Totals	287,320	$201,646	184,180	$127,998
Total Exports	.....	$5,229,281	.....	$7,862,697

THE MARKET FOR RUBBER SCRAP.

Copyright 1916.

NEW YORK.

SEPTEMBER has shown a marked improvement in the rubber scrap market as compared with the preceding month. Early in the month there was considerable activity noticed on the part of dealers who had been covering on old contracts. The actual volume of business, however, has not been large, but following the improved position of crude rubber and the fact that the large buyers are yet to be heard from, it would seem that better conditions are due in the near future.

BOOTS AND SHOES. Purchasers of this material confined their orders to supplies sufficient only for immediate needs. Although some irregularity was noted early in the month, prices appeared to be well established at 9 cents delivered, as holders were confident in the firmness displayed by this particular grade.

AUTO TIRES. There was considerable improvement in this material and toward the latter part of the month the market was quite firm. Mixed tires were quoted 6@6¼ cents for mill deliveries, while white G. and G. tires were considered high at 8⅜ cents. Some small lots of inner tubes have been moved at somewhat lower prices than a month ago. Solid tires have improved somewhat and sales were reported at unchanged prices that later in the month developed firmness. The other grades have remained practically featureless.

MECHANICALS. Dullness has characterized this material during the entire month, black scrap and garden hose being particularly stagnant.

For the twelve months ended June 30, 1916, United States imports of rubber scrap were 16,371,573 pounds, value $1,271,903, compared with 11,006,928 pounds, value $726,914, for 1915; 25,958,261 pounds, value $2,063,198, for 1914. Exports of rubber scrap for the same period were 4,561,177 pounds, value $424,650, for 1916; 2,422,091 pounds, value $291,421, for 1915; 6,207,678 pounds, value $598,287, for 1914.

London imports of waste and reclaimed rubber during August were 132,700 pounds; for Liverpool, 115,600 pounds. London exported during the same period 586,400 pounds; Liverpool, 479,600 pounds.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

SEPTEMBER 27, 1916.

Prices subject to change without notice.

	Per Pound.		
Boots and shoes	$0.09¼	@	
Trimmed arctics	.07⅛	@	
White tires, Goodrich and Goodyear	.08¼	@	
Auto tires, standard white	.06⅜	@	
standard mixed	.06¼	@	
stripped, unguaranteed	.04½	@	
Auto peelings, No. 1	.09½	@	
No. 2	.08¼	@	
Inner tubes, No. 1	.25½	@	
No. 2	.11¼	@	
red	.11½	@	
Irony tires	.02⅛	@	
Bicycle tires	.04¼	@	
Solid tires	.05⅛	@	
White scrap, No. 1	.13½	@	.14
No. 2	.10	@	
Red scrap, No. 1	.10	@	.11
No. 2	.08	@	.09
Mixed black scrap, No. 1	.04	@	.04¼
No. 2	.03¾	@	.04
Rubber car springs	.04	@	.04½
Horse shoe pads	.04¼	@	.04½
Matting and packings	.01	@	
Garden hose	01½	@	
Air brake hose	.05¼	@	
Cotton fire hose	.02½	@	
Large hose	.01½	@	
Hard rubber scrap, No. 1, bright fracture	.25	@	
Battery jars (black compound)	.02½	@	.02¾
Insulated wire stripping	.03	@	.03½
Rubber heels	.03½	@	.03¾

THE MARKET FOR COTTON AND OTHER FABRICS.

Copyright, 1916.

NEW YORK.

ANOTHER extraordinary jump in raw cotton followed the sensational advance of a month ago and January contracts were forced up to 16.42. The gloomy crop report and active buying in the South are the reasons attributed to this movement. During the month the market weakened under heavy selling pressure, but a renewal of general bull support carried January deliveries up to 16.30 on September 20, or within 18 points of the high record of September 1. The rumors of heavy buying for British account have not been confirmed. The opinion is current that 20-cent cotton will be a fact before many months.

R. Lamour Neill, a statistician of reputation, estimates this year's crop at 13,000,000 bales, exclusive of linters, or about 14,000,000 bales including linters.

SEA ISLAND COTTON. An active demand marked the opening of the southern markets that have been closed since August 1. Prices were irregular and the tone of the market sensitive. Fancy Georgias and Floridas were selling at 31@32 cents in Savannah September 8. Prices advanced strongly during the month and on September 22, Fancy Georgias and Floridas were selling in an excited market at 34@35 cents. The advance in Egyptians and the small amount offered will doubtless result in heavy demands and higher prices for Sea Islands. Crop reports from the Islands are not promising, while the Georgia and Florida crop on the whole is favorable.

EGYPTIAN COTTON. The continued rise in the American markets and unfavorable crop reports have been followed by a firm market and advancing prices, F. G. F. Sakelarides being quoted at 34 on August 25. The present is the most critical period for the Egyptian crop which, generally speaking, is not as favorable as two weeks ago. However, a definite forecast would be premature at this time.

HOSE AND BELTING DUCK. Foreign business has been easier this month and the domestic demand for mechanical duck has been about normal. The extraordinary call for all other rubber fabrics will doubtless result in a scarcity of hose and belting duck. Moreover, a government order for 2,000,000 yards of army, sail and wide duck will be placed early this month. This will require considerable loom capacity and result in a shortage elsewhere. The rubber trade is well covered for the first six months of 1917 and hose and belting contracts are being written for deliveries during the last half of next year.

Sheetings, Drills and Enameling Duck. The market is strong and price advances have been recorded in the entire list during the month. Wide grades are prominent in the demand, which is absorbing the capacity of the mills. Rubberized sheeting with imitation leather finish for auto tops is being substituted for cotton mohair.

Tire Fabrics. The demand is very great and the mills are sold up to capacity. The advancing prices of raw material and inability of the manufacturers to secure the necessary labor and new loom equipment have advanced prices and prolonged contract deliveries of tire fabrics to July, 1917. While it is generally conceded that the large consumers are covered, there are indications of a shortage in tire building fabrics.

NEW YORK QUOTATIONS.

SEPTEMBER 26, 1916.

Prices subject to change without notice.

Aeroplane and Balloon Fabrics:			
Wamsutta, S. A. I. L. No. 1, 40-inch	*yard*	$0.30	@
No. 4, 38½-inch		.30	@
O/X B. 36-inch		.13¾	@
Wool Stockinettes—52-inch:			
A—14-ounce	*yard*	1.25	@
B—14-ounce		1.50	@
C—14-ounce		1.75	@
Cotton Stockinettes—52-inch:			
D—14-ounce	*yard*	.50	@ .55
E—11½-ounce		.42	@ .50
F—14-ounce		.55	@ .60
G— 8-ounce		.48	@ .50
H—11-ounce		.50	@ .55
I — 9-ounce		.42	@ .45
Colors—white, black, blue, brown.			
Tire Fabrics:			
17¼-ounce Sea Island, combed	*square yard*	.90	@ .95
17¼-ounce Egyptian, combed		.75	@ .77
17¼-ounce Egyptian, carded		.72	@ .74
17¼-ounce Peelers, carded		.52	@
Sheeting:			
40-inch 2.35-yard	*yard*	.11	@ .11½
40-inch 2.50-yard		.10½	@
40-inch 2.70-yard		.10	@ .10½
40-inch 2.85-yard		.09¼	@
40-inch 3.15-yard		.09	@ .09¼
Osnaburgs:			
40-inch 2.25-yard	*yard*	.13	@ .13½
40-inch 2.48-yard		.11½	@ .12
37½-in. 2.42-yard		.12	@ .12½
Mechanical Ducks:			
Hose	*pound*	.30	@ .31
Belting		.30	@ .31
Carriage Cloth Duck:			
38-inch 2.00-yard enameling duck	*yard*	.15	@ .16
38-inch 1.74-yard		.17	@ .17¼
72-inch 16.66-ounce		.35	@ .36
72-inch 17.21-ounce		.36	@ .37
Drills:			
38-inch 2.00-yard	*yard*	.15	@
40-inch 2.47-yard		.12½	@
52-inch 1.90-yard		.16	@
52-inch 1.95-yard		.15¾	@
60-inch 1.52-yard		.21	@
Yarns:			
Garden Hose, 12/2 cabled	*pound*	Nominal	
Fire Hose 12/1		Nominal	
Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:			
63-inch, 3¼ to 7½ ounces	*square yard*	.38	@ 1.55
36-inch, 2¾ to 5 ounces		.35	@ .85
Imported Plaid Lining (Union and Cotton):			
63-inch, 2 to 4 ounces	*square yard*	.35	@ .75
36-inch, 2 to 4 ounces		.20	@ .45
Domestic Worsted Fabrics:			
36-inch, 4½ to 8 ounces	*square yard*	.27½	@ .50
Domestic Woven Plain Linings (Cotton):			
36-inch, 3¾ to 5 ounces	*square yard*	.15½	@ .20
Raincoat Cloth (Cotton):			
Bombazine	*yard*	.07½	@ .08
Twills		1.2	@ .18
Tweed		.0	@ .35
Tweed, printed		.07½	@ .15
Plaid		.08	@ .10
Repp		.18½	@ .25
Burlaps:			
32—7½-ounce	*100 yards*	6.30	@
40—7½-ounce		6.90	@
40—8-ounce		7.00	@
40—10-ounce		8.35	@
40—10½-ounce		8.50	@
45—7½-ounce		7.80	@
45—8-ounce		7.90	@
48—10-ounce		11.50	@

SEA ISLAND COTTON STATISTICS, 1910-1916.*

SEA ISLAND CROP 1915-1916.

	Receipts 1915-1916.	Receipts 1914-1915.
Stock on hand, August 1, 1915—Savannah, 2,212; Charleston, 170 *bales*	2,382	3,729
Received at Savannah (net)	38,216	33,052
Received at Charleston	6,211	5,488
Received at Jacksonville	30,367	27,258
Received at Norfolk (no figures obtainable)	.....	2,123
Received at interior points and shipped direct to southern mills	11,018	11,194
Total visible supply for season	88,194	82,844
Less Total Exports	85,686	80,462
Stock, July 31, 1916—Savannah, 2,401; Charleston, 107	2,508	2,382
Commercial crop for season 1915-16	85,812	78,857
Crop grown for season 1915-16	91,920	81,598

EXPORTS AND RESHIPMENTS 1915-1916.

	Great Britain.	Continent.	Northern Mills.	Southern Mills.	Savannah.	Total.
From Savannah *bales*	1,122	1,060	26,641	9,640	...	38,463
From Charleston	545	...	3,814	1,039	876	6,274
From Jacksonville	...	...	30,367	...	...	30,367
From Norfolk (no figures obtainable)	...	...	...	...	...	...
From interior points	...	...	...	11,018	...	11,018
	1,667	1,060	60,822	21,697	876	86,122
Less cotton counted twice	...	...	...	...	436	436
	1667	1.060	60,822	21,697	440	85,686

COMPARATIVE STATEMENT OF EXPORTS FOR PAST SIX YEARS.

	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.
Great Britain *bales*	13,346	13,685	10,914	11,749	1,922	1,667
Continent	5,808	6,615	5,161	4,833	1,991	1,060
Domestic, northern mills	56,896	92,679	29,451	67,636	60,879	60,822
Domestic, southern mills	7,952	9,029	10,492	14,427	15,409	21,697
	84,002	122,008	56,018	98,645	80,201	85,246

COMPARATIVE STATEMENT OF CROP GROWN FOR PAST SIX YEARS.

	1910-1911.	1911-1912.	1912-1913.	1913-1914.	1914-1915.	1915-1916.
South Carolina *bales*	13,784	5,122	8,375	8,670	5,590	6,178
Georgia and Florida	76,584	118,190	65,266	68,820	76,008	85,742
	90.368	123,312	73,641	77,490	81,598	91,920

*Compiled by John Malloch & Co., Savannah, Georgia.

THE MARKET FOR CHEMICALS AND OTHER INGREDIENTS.

Copyright 1916.

NEW YORK.

THE rubber chemical market for the past month has developed no unusual features worthy of special record. Generally speaking, the situation has been dull and prices have declined, with but few exceptions in the list. This was expected as a natural result of the high prices prevailing during the past year and their return to normal levels. Toward the end of September, trade was better in certain quarters, both foreign and domestic; inquiries had increased and, in consequence, prices were a shade firmer. These are signs of returning business activity that is confidently expected to be fully realized by November.

Barytes. The trade continues to take goodly amounts of barytes, and the demand keeps pace with the production, which is constantly increasing. Prices are firm and somewhat lower than a month ago.

Litharge. Contract deliveries of litharge have been freely made to the mills during the month. Producers report being well sold ahead for some time. There is a good demand and considerable inquiry for export. Prices are firm and unchanged.

Lithopone. Both foreign and domestic lithopone have gradually declined during the month. There was considerable movement of this material against old contracts placed some time ago at different prices. Spot stocks are not plenti-

ful and some sellers are having difficulty in making deliveries.

ZINC OXIDE. The decline in spelter resulted in lower prices, effective October 1, on French process grades, covering deliveries over the last quarter of the year. There was no change in American process grades.

DRY COLORS. Prices in general have gradually declined. Ultramarine blues and reds, however, have not changed much and are still scarce, while the imported grades are unobtainable. Red oxide is scarce and prices firm.

NAPHTHA. All the grades used in the trade have declined a cent since last month.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

Copyright 1916.

NEW YORK QUOTATIONS.

SEPTEMBER 28, 1916.

Subject to change without notice.

Acetone (drums)	lb.	$0.30	@	
Acid, acetic, 28 per cent. (bbls.)	lb.	.04⅜	@	.04⅝
cresylic (crude)	gal.	.80	@	
glacial, 99 per cent (carboys)	lb.	.27	@	.28
muriatic, 20 degrees	lb.	.02¼	@	.02½
nitric, 36 degrees	lb.	.06½	@	.06¾
sulphuric, 60 degrees	lb.	.01	@	
Alumina Pigment, No. 1 (sacks)	ton	16.00	@	
Aluminum Flake (carloads)	ton	20.00	@	22.00
Ammonium carbonate	lb.	.11	@	.12
Antimony, crimson, sulphuret of (casks)	lb.	.35	@	.50
crimson, "Mephisto" (casks)	lb.	.60	@	
golden, sulphuret of (casks)	lb.	.25	@	.35
golden, "Mephisto"	lb.	.29	@	
golden, sulphuret, States brand, 16-17 per cent.	lb.	.40	@	
Asbestine	ton	16.00	@	20.00
Asbestos	ton	15.00	@	35.00
Asphaltum "G" Brilliant	lb.	.02½	@	.03
Barium sulphate, precipitated	ton	150.00	@	
Barytes, pure white	ton	30.00	@	35.00
off color	ton	29.50	@	33.00
Basofor	ton	150.00	@	
Benzol, pure	gal.	.70	@	.75
Beta-Naphthol	lb.	1.10	@	1.20
Black Hypo	lb.	.45	@	.75
Bone ash	lb.		None	
black	lb.	.04	@	.08
Cadmium tri-sulphate (f. o. b. London)	lb.	2.75	@	
sulphide, yellow	lb.	2.10	@	2.20
Cantella gum	ton	16.00	@	20.00
Carbon, bisulphide (drums)	lb.	.06½	@	.07
black (cases)	lb.	.18	@	.20
tetrachloride (drums)	lb.	.19	@	.20
Caustic soda, 76 per cent.	lb.	.04¼	@	
Chalk, precipitated, extra light	lb.	.04½	@	.05¼
precipitated, heavy	lb.	.04	@	.05
China clay, domestic	lb.	.12	@	.15
imported	lb.	.18	@	.38
Chrome, green (pure)	lb.	.40	@	.65
yellow	lb.	.28	@	
Coal tar	bbl.	4.50	@	
Corn oil, refined	cwt.	10.25	@	
Cotton linters	lb.	.06⅞	@	
Fossil flour	lb.	.01½	@	.03
Gas black	lb.	.14	@	.20
Gilsonite	lb.	.02	@	.03
Glycerine, C. P. (drums)	lb.	.42½	@	
Graphite, flake (400 pound bbl.)	lb.	.20	@	
powdered (400 pound bbl.)	lb.	.07	@	
Green oxide of chromium (casks)	lb.	.75	@	
Ground glass (fine)	bbl.	.02½	@	
Indian red, reduced grades	lb.	.04	@	.06½
pure	lb.	.08	@	.08½
Infusorial earth, powdered	ton	50.00	@	60.00
bolted	ton	60.00	@	65.00
Iron oxide, red, reduced grades	lb.	.03½	@	.04
red, pure, bright	lb.	.11	@	.12
Ivory, black	lb.	.16	@	.30
Lampblack	lb.	.04	@	
Lead, red oxide of	lb.	.09¼	@	
sublimed blue	lb.	.08⅝	@	
sublimed white	lb.	.08⅝	@	
white, basic carbonate	lb.	.08¼	@	
white, basic sulphate	lb.	.08⅛	@	
Lime, flour	ton	16.50	@	22.50
Litharge	lb.	.08½	@	.10
English	lb.	.12	@	.14
sublimed	lb.	.09½	@	
Lithopone, domestic	lb.	.08	@	
Imported	lb.		Nominal	
Magnesia, carbonate	lb.	.10	@	.12
calcined, heavy	lb.	.10	@	
heavy, Thistle Brand	lb.	.14	@	
light	lb.	.30	@	
Magnesite, calcined, powdered	ton	35.00	@	39.00
Mica, powdered	lb.	.03½	@	.05½
Mineral rubber	lb.	.01	@	.02
"M. R. X."	ton	100.00	@	
"Genasco"	ton	36.50	@	
"L. M. R."	ton	50.00	@	
"Richmond Brand"	lb.	.03	@	
"No. 64 Brand"	ton	35.00	@	
"Refined Elaterite"	lb.	.05	@	
Naphtha, stove gasolene (steel bbls.)	gal.	.22	@	
66@68 degrees (steel bbls.)	gal.	.27	@	
68@70 degrees (steel bbls.)	gal.	.28	@	
V. M. & P. (steel bbls.)	gal.	.21	@	
Oil, aniline	lb.	.40	@	
linseed (bbl.)	gal.	.75	@	
palm	gal.	.13½	@	.14
paraffin	gal.	.17	@	
pine (cases)	gal.	.64	@	
rapeseed	gal.	1.00	@	1.05
rosin, heavy body	gal.	.38	@	
tar (cases)	gal.	.21½	@	
soluble aniline colors, yellow, orange, red, violet, blue, green	lb.	.10	@	.75
Orange mineral, domestic	lb.	.12	@	
Paragol (carloads)	cwt.	8.26	@	
Petrolatum	lb.	.03½	@	.04
Petroleum grease	lb.	.03¼	@	
Pine solvent			None	
Pine tar	bbl.	7.50	@	
Pitch, burgundy	lb.	.03½	@	.04
pine	lb.	.02	@	
Plaster of paris	lb.	1.50	@	1.70
Prussian blue	lb.	1.25	@	
Pumice stone, powdered (bbls.)	lb.	.03	@	.04
Resin, Pontianak, refined	lb.	.23	@	
granulated	lb.	.15	@	
fused	lb.	.15	@	
Rosin (280 pound bbls.)	bbl.	4.50	@	7.70
Rotten stone, powdered	lb.	.02½	@	.04
Rubber black	lb.	.06	@	
Rubber substitute, black	lb.	.08½	@	.10
white	lb.	.12½	@	.17
brown	lb.	.12½	@	.17
Rubhide			Nominal	
Shellac, fine orange	lb.	.38	@	.39
Soapstone, powdered	ton	10.00	@	22.50
Starch, corn, powdered	lb.	.02¼	@	.02½
Sulphur chloride (drums)	lb.	.09	@	.09½
Sulphur, flour, velvet, Brooklyn brand (carloads)	cwt.	2.15	@	
Talc, American	ton	8.00	@	17.50
French	ton	15.00	@	22.50
Toluol, pure	gal.	3.50	@	
Tripolite earth, powdered	ton	50.00	@	60.00
bolted	ton	60.00	@	65.00
Turpentine, rure gum spirits	gal.	.44	@	.46
wood	gal.	.43	@	
Venice	gal.	.11	@	.12
Ultramarine blue	lb.	.15	@	.50
Vermilion, brilliant	lb.	1.00	@	1.25
Chinese	lb.	.95	@	1.00
English	lb.	1.50	@	1.60
Wax, beeswax, white	lb.	.40	@	.50
ceresin, white	lb.	.11	@	.20
carnauba	lb.	.25¾	@	.45
ozokerite, black	lb.	.60	@	.65
green	lb.	.70	@	.75
montan	lb.	.27½	@	.28
paraffin, refined, 118/120 m. p. (cases)	lb.	.06½	@	
123/125 m. p. (cases)	lb.	.07	@	
128/130 m. p. (cases)	lb.	.08	@	
133/136 m. p. (cases)	lb.	.09½	@	.12
crude, white, 117/119 m. p. (bbls.)	lb.	.05	@	
yellow, 124/126 m. p. (bbls.)	lb.	.05¼	@	
Whiting, Alba	cwt.	.60	@	.70
commercial	cwt.	.75	@	1.00
gilders	cwt.	.85	@	1.00
Paris, white, American	cwt.	.95	@	1.00
English cliffstone	cwt.	1.25	@	1.50
Wood pulp XXX (carloads)	ton		Nominal	
Yellow ochre (Satin)	lb.	.02¼	@	
india rubber	lb.	1.50	@	
Zinc oxide, American process, horsehead brand	f. o. b. factory	lb.	.10½	@
"special"	f. o. b. factory	lb.	10	@
"XX red"	f. o. b. factory	lb.	.12½	@
French process, green seal, f. o. b. factory	lb.	.12¼	@	
red seal, f. o. b. factory	lb.	.13½	@	
white seal, f. o. b. factory	lb.	.01¼	@	
Zinc substitutes	lb.	.15	@	
Zinc sulphide, pure	lb.			

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC GUTTA-PERCHA

Vol. 55 OCTOBER 1, 1916 No. 1

TABLE OF CONTENTS.

	Pages.
Editorials:	
A Pension Plan for Mutual Benefit	1
Rubber Prospects in French Indo-China	1
"It Shines for All" But the Rubber Men	1-2
The Cost of Wet Rubber	2
A Latin-American Viewpoint	2
Minor Editorials	2
Plantation Rubber in Cochin China—II *Illustrated*	3-5
Chemical Convention and Exposition [Portraits of Messrs. Weber, Pearson and Tuttle.]	6-9
Chemistry:	
What the Rubber Chemists Are Doing	10-11
Methods of Analysis	11-12
Chemical Patents	12
Laboratory Apparatus *Illustrated*	12
Machines and Appliances, New *Illustrated*	13-14
Rubber Shoe Pattern Room. Some Garvin Hard Rubber Lathes. A Convenient Cement Can. The Master Chronograph.	
Machinery Patents *Illustrated*	15-17
Portable Rag Wrapping Machine. Machine for Making and Coating Weftless Fabrics. Mechanically Operated Strainer Heads. Inner Tube Rolling Machine. Tire Building Machine with Fabric Stretching Disks. A French Portable Repair Vulcanizer. Other Machinery Patents.	
Process Patents *Illustrated*	16-17
Miscellaneous Patents *Illustrated*	17
New Goods and Specialties *Illustrated*	18-20
Red Rubber Dolls. Rubber-Incased Desk Clock. Tooth-Brush Attachment. "Rinex" Soles. Decorated Toy Balls. Steel Eraser for Fountain Pen. Cushion Rubber-Soled Canvas Shoe. A Flexible Coupling and Universal Joint. Rubber-Coated Adhesive Plaster. Hat "Sweat" Band with Rubber Disks. Goodrich Rubber Blanket and Apron. Styles in Waterproof Garments. The "Silvertown" Valise Tent. The New "Cravenette Finish."	
Tires:	
Firestone "Giant" Solid Rubber Tires *Illustrated*	21
Fear-Naught Tubeless Tire, The *Illustrated*	21
Duco Pneumatic Tire Gage, The *Illustrated*	21
Method of Determining Air Pressure in Tires	21
Editor's Book Table	22
"Sierra Leone: Its People, Products and Secret Societies." "Importer's Directory of the Netherlands East Indies."	
New Trade Publications	22-23
Inquiries and Trade Opportunities	23
Judicial Decisions	23
Interesting Letters from Our Readers	24-25
Russian Prison Camp, Postal from *Illustrated*	25
Tennis Shoes for Summer of 1917 *Illustrated*	26-27
American Rubber Trade—News Notes and Personals	27-33
Rubber Club of America, Inc., The	27
New Incorporations	28
Rubber Company Share Quotations	29
Rubber Company Dividends	29
Raymond S. Willis—Portrait and Sketch	30
Aligning Motor Car Wheels *Illustrated*	32
Obituary Record F. Madero (Portrait), P. Schmidt (Portrait), E. J. Bowes, W. H. Robinson, O. York, J. Locke.	34-35
Pontianak, Poor Packing of *Illustrated*	35
Domestic Correspondence:	
Akron *By Our Correspondent*	36
Boston *By Our Correspondent*	36-37
Rhode Island *By Our Correspondent*	37-38
Trenton *By Our Correspondent—Illustrated*	38-39
Insulated Wire Testing Laboratory *Illustrated*	39
Foreign Rubber News:	
Great Britain *By Our Correspondent*	40-41
European Trade Notes	41
Germany *By Our Correspondent—Illustrated*	41-42
Planting Notes, Rubber	42-43
Malaya *By Our Correspondent*	43-44
Mexico *Illustrated*	45-46
British Guiana *By Our Correspondent*	46
Crop and Rainfall Percentage in Ceylon and Malaya *Illustrated*	43
Rubber Adulterated with Starch	44
Patents Relating to Rubber United States, Canada, United Kingdom, New Zealand, French Republic.	47-48
Trade Marks United States, Canada, United Kingdom, France.	48-49
Designs	49
Markets:	
Crude Rubber	50
Market Cables	50
Singapore Rubber Auction	51
Rubber Scrap	59
Cotton and Other Fabrics	59-60
Chemical and Ingredients	60-61
Statistics:	
Brazil, Rubber Exports from Manaos During July, 1916.	53
Canada, Rubber Statistics for Three Months Ending June, 1916	57-58
Ceylon, Rubber Exports	51
Cotton Statistics 1910-1915	60
Federated Malay States, Rubber Exports	51
Italy, Rubber Statistics for Five Months, Including May, 1916	58-59
London and Liverpool Rubber Imports and Exports for August, 1916	57
Malaya, Rubber Exports	51
Straits Settlements, Rubber Exports	51
United States, Custom House Statistics	53
New York Arrivals of Crude Rubber	52-53
Imports and Exports of Crude and Manufactured Rubber	56
Rubber Statistics for Fiscal Year, Official	54-55
Seattle, Arrivals of Crude Rubber	53
World's Rubber Production and Distribution	55

FIRE AND ACCIDENT PREVENTION DAY.

To eliminate common fire and accident hazards from the United States and Canada the National Fire Protection Association and the National Safety Council are urging the nation-wide observance of Fire and Accident Prevention Day on October 9, the anniversary of the great Chicago fire. An attractive poster has been designed, and suggested programs for observance of the day worked out, which are being distributed to the civic and commercial organizations of the country. The national and Dominion associations of fire chiefs, fire marshals and credit men are cöoperating. While sporadic observances of fire prevention day have heretofore been held in certain states and cities, this is the first organized attempt to promote its general observance throughout this nation and the Dominion.